

**DEVELOPMENT OF TECHNOLOGY FOR FLUID-STRUCTURE INTERACTION  
MODELING OF A 1/8-SCALE DYNAMIC MODEL OF THE SHUTTLE  
EXTERNAL TANK (ET)**

**Volume II: Supporting Data  
Appendixes A Through C**

by

M. Bernstein, R. Coppolino, J. Zalesak, and P. W. Mason

August 1974

Final Report — Prepared Under Contract No. NAS 1-10635-13

by

Grumman Aerospace Corporation

Bethpage, New York 11714

Langley Research Center  
Hampton, Virginia 23665

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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## FOREWORD

The work described in this report was performed at the Grumman Aerospace Corporation, Bethpage, New York, and administered by the Vibration Section of the Structures and Dynamics Division, NASA Langley Research Center, Hampton, Virginia.

The work performed under NASA Contract NAS1-10635-13 included the construction and delivery of the 1/8-Scale Shuttle Model External Tank and the generation and delivery of a NASTRAN hydroelastic model of this tank. Prior to the manufacture of the model, the Space Division of Rockwell International funded a design effort to modify the forward attachments of the External Tank (ET) to the Solid Rocket Booster (SRB) so that they more closely represented the prototype attachments.

After it became apparent that modifications in NASTRAN hydroelastic formulation were advisable, additional funding was provided by the Space Division of Rockwell International to partially support the developments described in Section 4. Although not part of the task under NAS1-10635-13, Section 4 is included as information for potential NASTRAN users.

Many persons at Grumman and NASA Langley have contributed to the various phases of this program. The technical assistance and direction of Dr. L. P. Pinson and Mr. U. J. Blanchard of the NASA Langley Research Center is gratefully acknowledged. The following persons contributed significantly to this effort at Grumman:

- Master Agreement Program Management: E. F. Baird
- Task Order Management: M. Bernstein
- Design and Manufacturing Liason: A. P. La Valle
- Stress Analysis: W. P. Blerds
- Manufacture of Model: R. A. Wagenseil
- Model Final Assembly: M. Gack, G. Stevens

- **NASTRAN Dynamic Analysis:** M. Bernstein, J. Zalesak, P. W. Mason, D. Gregory
- **Modification of Hydroelastic Formulation:** R. Coppolino
- **NASTRAN Modification:** R. Coppolino and A. Levy
- **Shell Analysis:** V. Svalbonas

**This report consists of two volumes as follows:**

- **Volume I - Technical Report**
- **Volume II - Supporting Data**

## ABSTRACT

This report describes a NASTRAN analysis of the external tank (ET) substructure of the 1/8-scale space shuttle structural dynamics model.

The NASTRAN hydroelastic procedures were used to form a model of the liquid oxygen portion of the ET. Large computer storage requirements and running times were required unless these procedures were modified. Several possibilities were demonstrated including the substitution of the real for the complex eigenvalue routine and the use of the OMIT capability to reduce the number of fluid coordinates.

A NASTRAN model of the complete ET was then formed and reduced to 252 degrees of freedom using these procedures. A review of the eigenvector extracted, using the unsymmetrical inverse power method, indicated that the structural OMIT's resulted in unsatisfactory modal deflections. More basic modifications to the NASTRAN hydroelastic capability appeared necessary to generate a successful ET model.

An approach is described which, by assuming incompressibility, reduces the fluid representation to a symmetric mass matrix which can be added to the structural mass. The problem can then be solved using faster and more efficient eigenvalue routines. Using this approach the ET NASTRAN model was analyzed for three separate weight conditions. Computational efficiency was good, averaging less than 1 CPU minute for each mode.

#### NOTE

This report is one of a series describing analytical work at Grumman on the 1/8-Scale Structural Dynamics Model.

The other reports are:

- Analytical and Experimental Investigation of a 1/8-Scale Dynamic Model of the Shuttle Orbiter:
  - Volume I, "Introduction" - NASA CR 132488  
May 1974
  - Volume II, "Technical Report" - NASA CR 132489  
July 1974
  - Volume IIIA, "Supporting Data" - NASA CR  
132490 May 1974
  - Volume IIIB, "Supporting Data" - NASA CR  
132491 May 1974
- Development of Technology For Modeling of a 1/8-Scale Dynamic Model of the Shuttle Solid Rocket Booster (SRB)
  - NASA CR 132492 July 1974

## ABBREVIATIONS

ALARM	}	computer programs to solve eigen-value problems of very large size
FEER		
ALTER		modification of NASTRAN rigid formats
DOF		degrees of freedom
ET		External Tank
LH <sub>2</sub>		liquid hydrogen
LO <sub>2</sub>		liquid oxygen
MPC		multiple point constraint - NASTRAN
NASTRAN		NASA Structural Analysis System
SPC		single point constraint - NASTRAN
SRB		Solid Rocket Booster

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**Appendix A**  
**STARS-2 VIBRATION ANALYSIS OF 1/8-SCALE SHUTTLE LH<sub>2</sub> TANK**

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## APPENDIX A

### STARS-2 VIBRATION ANALYSIS OF 1/8-SCALE SHUTTLE LH<sub>2</sub> TANK

V. Svalbonas

The 1/8-scale shuttle LH<sub>2</sub> tank section between stations 148.756 and 229.156 (Fig. A-1) appears, from a NASTRAN analysis, to be susceptible to localized vibration modes. Thus, several analyses were made using STARS-2 to correlate this characteristic, and to determine the possible effect of fluid stabilization pressure.

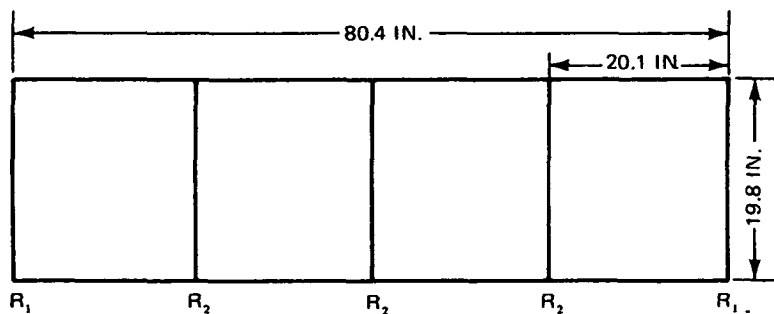
The ring stiffened cylindrical section between stations 148.756 and 229.156 was first isolated and the skin gage was assumed uniform at  $t = 0.016$  in. for the STARS idealization. The offset rings were included in the analyses. The following analyses were made:

1. A study to obtain the effects of fluid pressure upon the shell frequencies.

Three runs were made for this study:

- Zero pressure in the shell
- Static fluid pressure in the shell
- Ten times static fluid pressure in the shell.

The boundary conditions consisted of only rotation restraints at the edges. As shown in Table A-1, the addition of fluid pressure has little effect upon the frequencies.



T13-43

#### Ring Properties

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>• R<sub>1</sub></li> <li>— <math>A = 0.324 \text{ IN.}^2</math></li> <li>— <math>I = 0.368 \text{ in.}^4</math></li> <li>— OFFSET = 1.4 IN.</li> </ul> | <ul style="list-style-type: none"> <li>• R<sub>2</sub></li> <li>— <math>A = 0.054 \text{ IN.}^2</math></li> <li>— <math>I = 0.0025 \text{ IN.}^4</math></li> <li>— OFFSET = 0.185 IN.</li> <li>• SKIN <math>t = 0.016</math> IN.</li> </ul> |
|---|---|

Fig. A-1 LH<sub>2</sub> Tank Between Sta. 148.756 and 229.156

**Table A-1 Pressure Dependence of Frequencies**

Circumferential Harmonic	Normal Displacement Wave Pattern	Lowest Frequency in Circumferential Harmonic (cps)		
		No Pressure	Static Pressure	10X Static Pressure
$n^{(1)} = 2$	$m^{(2)} = 1$	115.8	116.2	119.6
$n = 3$	$m = 1$	124.7	125.8	135.3
$n = 4$	$m = 1$	120.6	122.8	141.5
$n = 5$	$m = 1$	151.3	154.3	178.4
(1) Number of full waves along the shell circumference				
(2) Longitudinal mode number (number of half-waves along the shell meridian)				

T13-11(T)

2. A study to obtain the effects of edge restraints upon the shell frequencies.

The first run involved fixed ends for the shell; the frequency values are presented in Table A-2. In the second run, the rotation restraint was removed and the ends were pinned. The results from this run are indicated in Table A-3. This table shows rather unusual behavior since the frequency appears relatively independent of circumferential wave shape ( $n$ ). In addition, the third highest frequency in each Fourier harmonic was essentially the first that was found in Table A-2 for the fixed end case. This type of behavior indicates that the shell is very flexible, and pinned supports essentially do not apply an axial restraint to the shell. A spot check of this assumption was made by removing axial boundary restraints and the results are shown in Table A-4.

The results of the above studies indicate that the shuttle  $LH_2$  tank contains a rather flexible area between stations 148.756 and 229.156, and is thus susceptible to local vibration modes in this area. While the present analysis cannot correlate the actual NASTRAN numbers obtained for these frequencies (the NASTRAN idealization is rather coarse in this area), the existence of such local modes has been sufficiently correlated. In addition, the effect of fluid pressure as stiffening against these modes has been shown to be negligible.



**Table A-2 Fixed End Cylinder Frequencies**

<b>n</b>	<b>m (Normal Displacement)</b>	<b>Lowest Frequency for Given n (cps)</b>
0	1 (torsion)	707.4
1	1	465.8
2	1	259.8
3	1	163.7
4	1	138.7
5	1	159.0
6	1	192.9
7	1	217.9
8	4	210.4
9	4	180.8
10	4	155.7
11	4	137.1
12	4	124.6
13	4	117.7
14	4	115.5
15	4	117.4
16	4	122.7
17	4	130.8
18	—	142.9

T13-12(T)

**Table A-3 Pinned End Cylinder Frequencies**

n	m (Normal Displacement)*	Lowest Frequency for Given n (cps)
0	Local Boundary Mode Only	41.87
1	1	41.86
2	1	41.85
3	1	41.81
4	1	41.78
5	2	41.73
6	2	41.65
7	3	41.56
8	4	41.44
9	4	41.33
10	4	41.19
11	4	41.05
12	4	40.90
13	4	40.75
14	4	40.60
15	4	40.46
16	4	40.33
17	4	40.20
18	4	40.08
19	5**	39.96
20	7**	39.87
21	7**	39.78
22	7**	39.73
23	7**	39.68
24	7**	39.65
25	8**	39.65
26	7**	39.67
27	8**	39.71
28	11**	39.77
29	9**	39.87
30	—	39.98

\*=All Modes Contain a Boundary Disturbance  
 \*\*=Rings Causing Disturbances

T13-13(T)

**Table A-4 Frequencies of Pinned Cylinder — No Axial Restraint**

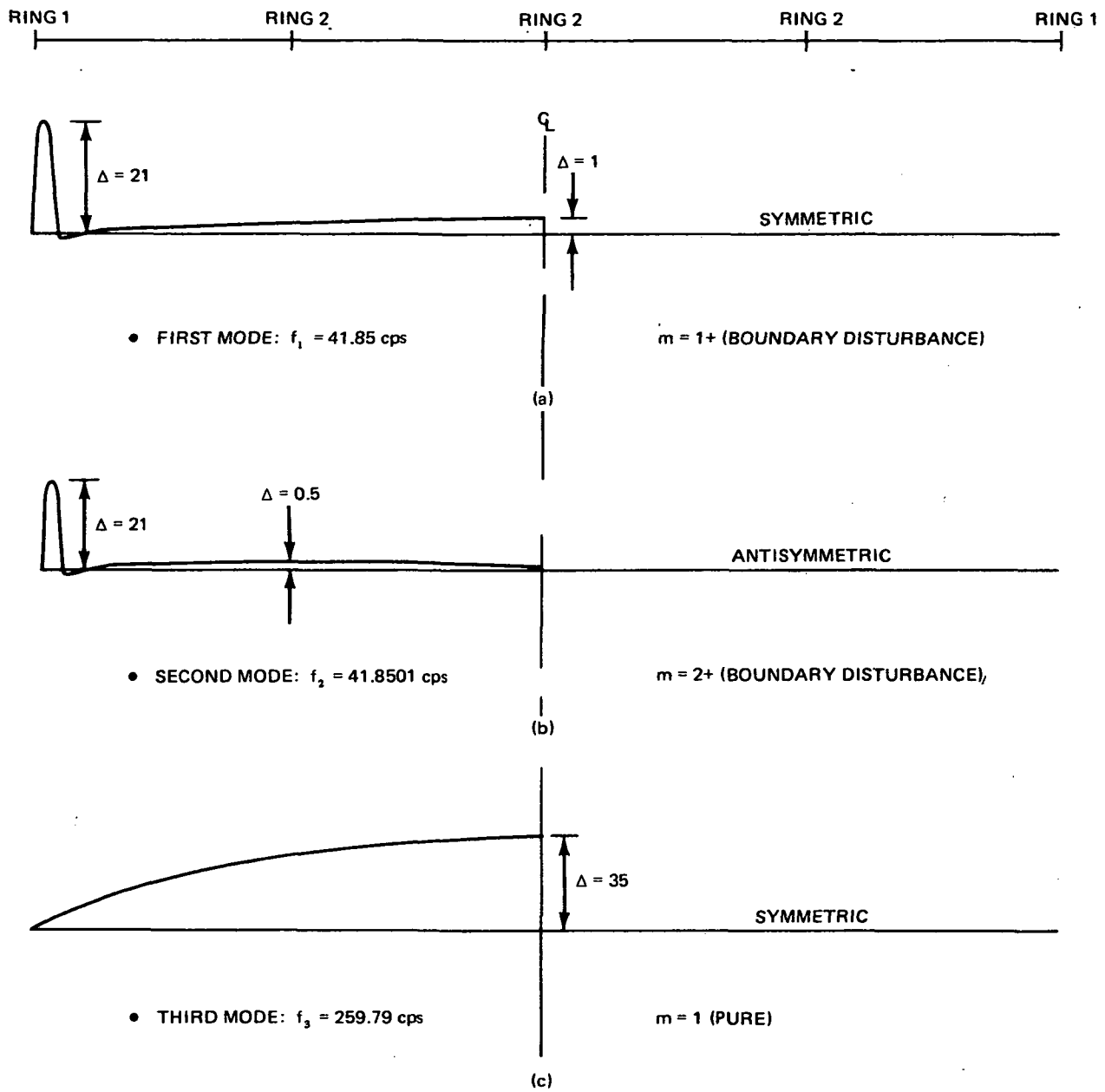
n	m (Normal Displacement)	Lowest Frequency for Given n (cps)
2	1	41.70
4	1	41.62
6	2	41.49
8	4	41.27
10	4	40.94
12	4	40.49
14	4	40.08
16	4	39.76
18	4	39.49

T13-14(T)

STARS-2 VIBRATION ANALYSIS OF 1/8-SCALE SHUTTLE LH<sub>2</sub> TANK - ADDENDUM  
V. Svalbonas

This addendum is intended as a clarification of preceeding paragraphs and tabulated data in this appendix. It was concluded that the local area between stations 148.756 and 229.156 of the shuttle 1/8-scale LH<sub>2</sub> tank was very flexible and subject to local vibration modes. It was also stated that boundary effects are therefore negligible. A quick reading of Table A-2, -3 and -4, (Ref. 1) for  $n = 2$ , (2 full waves around the shell circumference) and  $m = 1$  (one-half wave along the shell length) reveals the frequencies of 259.8 cps for fixed ends, 41.85 cps for pinned ends, and 41.70 cps for axially unrestrained pinned ends. Thus, boundary effects do not appear negligible. The key is contained in the note on Table A-3 about boundary disturbances, and is further clarified in Fig. A-2.

As can be seen from Fig. A-2, the first two modes contain very strong influences of local boundary effects (See deflections at the boundaries). The third mode plotted is the true  $m = 1$  mode which should be compared to the fixed end case, and the two frequencies are: 259.8 cps (fixed), 259.79 cps (pinned). It should be noted that in Fig. A-2a and A-2b, the longitudinal half-wave number is designated  $m = 1 +$  and  $m = 2 +$ , respectively, to indicate the effect of the boundary disturbance. Only the pinned end mode shown in Fig. A-2c is a true half-sine wave ( $m = 1$ ). Even the first mode in the fixed-end case would not be truly  $m = 1$  since the restriction of zero slope at the ends is imposed. In this case, however, the inflection point is less than 0.2 in. from the ends. In all cases, the boundary disturbances do not extend more than 1.5 in. into the shell. Thus in this case the effects of the boundary conditions appear to be negligible compared to the effects of the boundary disturbances. The frequencies in Tables A-3 and A-4 are associated with localized boundary disturbances and should not be directly compared with the frequencies listed in Table A-2. When the correct frequencies are compared, the closeness noted above for  $n = 2$  is typical.



T13-44

Fig. A-2 First Three Vibration Modes for ( $n=2$  Harmonic) Pinned End Shell,

**Appendix B1**  
**MODIFICATION OF THE NASTRAN HYDROELASTIC ANALYSIS**

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## APPENDIX B

### B1 MODIFICATION OF THE NASTRAN HYDROELASTIC ANALYSIS

**Summary** - A modification of the NASTRAN hydroelastic analysis technique is proposed for application in the study of liquid-filled tank dynamics. The modification consists of elimination of fluid compressibility, which is unnecessary in the analysis of hydroelastic tanks, and the ultimate reduction of the NASTRAN finite element fluid representation to a set of equations relating the fluid bounding surface pressures to outward normal bounding surface accelerations. The final representation of the fluid is in terms of a true mass matrix. This is coupled with the tank structural mass matrix at the fluid/structural interface; the variables describing the dynamics of the fluid are surface outward normal displacements in the current modification. Moreover, the fluid mass matrix is symmetric and positive definite as it is directly related to the fluid kinetic energy.

**Derivation of the Incompressible Fluid Equations** - The set of irrotational fluid dynamic equations resulting from the generalized energy derivation in the NASTRAN Theoretical Manual (16.1) are:

$$M_{ij} \ddot{P}_j + K_{ij} P_j = I_i \quad (1)$$

with  $P_j$  corresponding to the pressure at the  $j$ th node and  $I_i$  corresponding to a "generalized force" at the  $i$ th node. The "generalized forces,"  $I_i$ , consist of volumetric flow accelerations at the fluid boundary, i. e.,

$$I_i = \begin{cases} -S_i \ddot{U}_i & \text{on the fluid boundary} \\ 0 & \text{in the interior} \end{cases} \quad (2)$$

with  $\ddot{U}_i$  and  $S_i$  corresponding to the outward normal bounding surface acceleration and the associated surface area, respectively, at node  $i$ . The generalized "mass" and "stiffness" matrices are, respectively,

$$M_{ij} = M_{ji} = \frac{\partial^2 T}{\partial \dot{p}_i \partial \dot{p}_j} \quad K_{ij} = K_{ji} = \frac{\partial^2 U}{\partial p_i \partial p_j} \quad (3a, b)$$

with

$$T = \int_V \frac{1}{2B} \dot{P}^2 dV \quad (3c)$$

$$U = \int_V \frac{1}{2\rho} (\nabla P \cdot \nabla P) dV. \quad (3d)$$

B represents the fluid bulk modulus and  $\rho$  represents the fluid density.

Now consider the case of an incompressible fluid ( $B \rightarrow \infty$ ), for which the generalized "mass" matrix is null. The matrix set of fluid dynamic equations, Eq. 1, in rearranged form reduce to the partitioned set of algebraic equations

$$\begin{pmatrix} K_{SS} & K_{SI} \\ \bar{K}_{IS} & K_{II} \end{pmatrix} \begin{Bmatrix} P_S \\ P_I \end{Bmatrix} = \begin{pmatrix} \dot{U}_S \\ 0 \end{pmatrix} \begin{Bmatrix} \ddot{U}_S \end{Bmatrix} \quad (4)$$

with the subscripts S and I denoting bounding surface and interior node subsets, respectively.

The lower partition set of equations is solved to yield the relationship between surface and interior pressures

$$P_I = -K_{II}^{-1} K_{IS} P_S \quad (5)$$

and substitution of the above into the upper partition set of equations results in

$$(\bar{K}) \{P_S\} = -(\dot{U}_S) \{U_S\} \quad (6a)$$

with

$$\bar{K} = K_{SS} - K_{SI} K_{II}^{-1} K_{IS} \quad (6b)$$

This operation represents a drastic reduction in the number of fluid nodes. Inversion of a large matrix,  $K_{II}$ , represents a penalty that does not outweigh the disadvantages associated with the solution of a large unsymmetrical eigenvalue problem.

The generalized "stiffness" matrices in Eq. 4 and Eq. 6a are necessarily singular due to the incompressibility of the fluid. This is illustrated by subjecting the fluid to uniform pressure.



$$\begin{pmatrix} P_S \\ \hline P_I \end{pmatrix} = \begin{pmatrix} 1 \\ \vdots \\ 1 \end{pmatrix} \quad (7)$$

Under such loading, the surface normal accelerations must be zero. This property is inherent in the NASTRAN fluid generalized "stiffness" matrix since

$$\sum_j K_{ij} = 0 \quad (8)$$

for all  $i$ . Inversion of the generalized "stiffness" matrices in Eq. 4 and Eq. 6a, which is highly desirable, is not defined. A single redundant,\* incompressibility, exists in the system which is stated simply as

$$\sum_{i=1}^N s_i \ddot{U}_i = 0 \quad (9)$$

and is analogous to the divergence of the fluid velocity across a boundary. By arbitrarily choosing the last nodal acceleration as the redundant, the following transformation may be introduced:

$$\begin{pmatrix} 1 & & & 0 \\ & \ddots & & \\ & & 1 & 0 \\ \hline & & & 1 \end{pmatrix} \begin{pmatrix} s_1 \ddot{U}_1 \\ \vdots \\ s_{N-1} \ddot{U}_{N-1} \\ \hline s_N \ddot{U}_N \end{pmatrix} = \begin{pmatrix} s_1 \ddot{U}_1 \\ \vdots \\ s_{N-1} \ddot{U}_{N-1} \\ \hline \sum_{i=1}^N s_i \ddot{U}_i \end{pmatrix} \quad (10a)$$

---

\*In the representation of a fluid of axisymmetric geometry in terms of circumferential harmonics, the redundant exists only in the zero<sup>th</sup> harmonic; there is no hydrostatic component in the higher harmonics.

from which

$$\left\{ \begin{array}{c} s_1 \ddot{u}_1 \\ \vdots \\ s_{N-1} \ddot{u}_{N-1} \\ \hline s_N \ddot{u}_N \end{array} \right\} = \left( \begin{array}{c|c} 1 & 0 \\ \vdots & \vdots \\ 1 & 0 \\ \hline 1 & 1 \end{array} \right) \left\{ \begin{array}{c} s_1 \ddot{u}_1 \\ \vdots \\ s_{N-1} \ddot{u}_{N-1} \\ \hline 0 \end{array} \right\} \quad (10b)$$

by virtue of Eq. 9.

In addition, consider the pressure transformation

$$\left( \begin{array}{c|c} 1 & 1 \\ \vdots & \vdots \\ 1 & 1 \\ \hline 0 & 1 \end{array} \right) \left\{ \begin{array}{c} P'_1 \\ \vdots \\ P'_{N-1} \\ \hline P_N \end{array} \right\} = \left\{ \begin{array}{c} P_1 \\ \vdots \\ P_N \end{array} \right\} \quad (10c)$$

with  $P'_i$  ( $i=1, \dots, N-1$ ) taken as pressure deviations off a reference uniform pressure,  $P_N$ .

Substitution of Eq. 10b into Eq. 6a results in

$$(\bar{K}) (T^T) \left\{ \begin{array}{c} P'_1 \\ \vdots \\ \hline P_{N-1} \\ P_N \end{array} \right\} = - \left\{ \begin{array}{c} s_1 u_1 \\ \vdots \\ \hline s_N \ddot{u}_N \end{array} \right\} \quad (11a)$$

where

$$T = \left( \begin{array}{c|c} 1 & 0 \\ \vdots & \vdots \\ 1 & 0 \\ \hline 1 & 1 \end{array} \right) \quad (11b)$$

Premultiplication of Eq. 11a by  $T^T$  noting Eq 10a results in

$$(T)(\bar{K})(T^T) \begin{Bmatrix} P'_1 \\ \cdot \\ \cdot \\ P_{N-1} \\ \hline P_N \end{Bmatrix} = -(T) \begin{Bmatrix} S_1 \ddot{U}_1 \\ \cdot \\ \cdot \\ S_N \ddot{U}_N \end{Bmatrix} = - \begin{Bmatrix} S_1 \ddot{U}_1 \\ \cdot \\ \cdot \\ S_{N-1} \ddot{U}_{N-2} \\ \hline \sum_{i=1}^N S_i \ddot{U}_i \end{Bmatrix} \quad (11c)$$

which by virtue of Eq 8 reduces to

$$\left( \begin{array}{cc|c} \bar{K}_{11} & \bar{K}_{1,N-1} & 0 \\ \vdots & \vdots & \vdots \\ \bar{K}_{N-1,1} & \bar{K}_{N-1,N-1} & 0 \\ \hline 0 & \cdots & 0 \end{array} \right) \begin{Bmatrix} P'_1 \\ \vdots \\ P'_{N-1} \\ \hline P_N \end{Bmatrix} = \begin{Bmatrix} -S_1 \ddot{U}_1 \\ \vdots \\ -S_{N-1} \ddot{U}_{N-1} \\ \hline -\sum_{i=1}^N S_i \ddot{U}_i \end{Bmatrix} \quad (11d)$$

or

$$K' P' = \left( \begin{array}{cc|c} \bar{K}_{11} & \bar{K}_{1,N-1} & \\ \vdots & \vdots & \vdots \\ \bar{K}_{N-1,1} & \bar{K}_{N-1,N-1} & \\ \hline & & \end{array} \right) \begin{Bmatrix} P'_1 \\ \vdots \\ P'_{N-1} \end{Bmatrix} = - \begin{Bmatrix} S_1 \ddot{U}_1 \\ \vdots \\ S_{N-1} \ddot{U}_{N-1} \end{Bmatrix} = -S' \ddot{U}' \quad (11e)$$

$$0 = \sum_{i=1}^N S_i \ddot{U}_i \quad (11f)$$

with the reference uniform pressure,  $P_N$ , for the present time indeterminate. The reduced stiffness matrix Eq. 11b is not singular; it is recognized as the inverse of a fluid inertia matrix, i.e.,

$$(K')^{-1} (S') \{ \ddot{U}' \} = - \{ P' \} \quad (12a)$$

Finally, pre-multiplication by (S') results in the symmetric fluid mass matrix relating fluid outward normal accelerations to normal surface forces (directed positive outward)

$$\begin{aligned} (M) \{ \ddot{U}' \} &= (S' K'^{-1} S') \{ \ddot{U}' \} \\ &= - (S') \{ P' \} = - \{ F' \} \end{aligned} \quad (12b)$$

Further insight into the above result is gained by examination of the fluid energy. The virtual work done by the external (bounding surface) pressures is

$$\delta W_b = - \sum_{i=1}^n \delta U_i S_i P_i \quad (13a)$$

or in terms of the pressure deviations

$$\begin{aligned} \delta W_b &= - \sum_{i=1}^{N-1} \delta U_i S_i (P_i - P_N) - \sum_{i=1}^{N-1} \delta U_i S_i P_N - \delta U_N S_N P_N \\ &= - \sum_{i=1}^{N-1} \delta U_i S_i (P_i - P_N) - P_N \sum_{i=1}^N \delta U_i S_i \end{aligned} \quad (13b)$$

And due to the constraint of incompressibility, Eq. 9 which holds also under geometrically admissible displacement variations

$$\delta W_b = - \sum_{i=1}^{N-1} \delta U_i S_i (P_i - P_N) = - \sum_{i=1}^{N-1} \delta U_i S_i P'_i \quad (13c)$$

Since the generalized forces on the incompressible fluid are the pressure deviation forces, it is an obvious conclusion that the fluid kinetic energy is

$$\begin{aligned} T_{\text{fluid}} &= \frac{1}{2} \dot{U}'^T M \dot{U}' \\ &= \frac{1}{2} \sum_{i=1}^{N-1} \sum_{j=1}^{N-1} M_{ij} \dot{U}_i \dot{U}_j \end{aligned} \quad (14)$$

with  $M$  having the property of positive definiteness and symmetry.

The special case of zero free surface pressure should be noted; this corresponds to the case in which both gravitational waves and ullage pressure are neglected. In this case, the generalized "stiffness" matrix in Eq. 6a, is partitioned into free surface and structural interface components. In rearranged form (if rearrangement is necessary), Eq. 6a becomes

$$\bar{K} P_S = \begin{pmatrix} K_{ff} & | & K_{fb} \\ \hline K_{bf} & | & K_{bb} \end{pmatrix} \begin{Bmatrix} P_f \\ P_b \end{Bmatrix} = - \begin{pmatrix} S_f & | & \\ \hline & & S_b \end{pmatrix} \begin{Bmatrix} \ddot{U}_f \\ \ddot{U}_b \end{Bmatrix} \quad (15)$$

With the free surface pressures,  $P_f$ , as null, the structural interface pressures,  $P_b$ , are directly related to the corresponding surface accelerations,  $U_b$ , as

$$K_{bb} P_b = - S_b \ddot{U}_b \quad (16a)$$

with  $K_{bb}$  not singular. Thus

$$M_b \ddot{U}_b = (S_b K_{bb}^{-1} S_b) \{ \ddot{U}_b \} = - S_b P_b = - F_b \quad (16b)$$

for this special case. In addition, the free surface displacements are related to the structural interface displacements as

$$S_f^{-1} (K_{fb} K_{bb}^{-1}) S_b \ddot{U}_b = \ddot{U}_f \quad (16c)$$

In the formulation of a typical hydroelastic problem, the fluid mass matrix in Eq. 12b or Eq. 16b is coupled with the tank structural mass matrix at the common nodes as in a typical structural dynamics problem; with the aid of any geometric transformations necessary to describe the fluid and structural DOF's in terms of a common reference frame. Next, the potential energies associated with structural deformation, free surface gravitational waves, and ullage pressure fluctuation are described in terms of the necessary stiffness matrices (in terms of displacement variables). The individual stiffness matrices are then coupled to form a system

stiffness matrix. This matrix is then subjected to the constraint of Eq. 9. At this point, the hydroelastic tank total mass and stiffness matrices are formed. The matrices are symmetric since the problem is formulated as a standard structural dynamics one. The formulation resulting from the suggested fluid modification has the following advantages over the present NASTRAN hydroelastic analysis:

- All fluid internal nodes are eliminated thus drastically reducing the number of system equations
- The symmetric form of the modified set of equations enables the analyst to use fast eigenvalue analysis techniques, modal coupling, Guyan reduction, and in general, any technique applicable to typical structural dynamics problems.

**Appendix B2**  
**HYDROELASTIC ANALYSIS – PROGRESS REPORT**

## B2 HYDROELASTIC ANALYSIS - PROGRESS REPORT

### B2.1 MODIFICATION OF THE NASTRAN HYDROELASTIC ANALYSIS - THEORETICAL DEVELOPMENT

The matrix set of equations developed in Rigid Format 7 consist of:

$$\begin{pmatrix} \tilde{M}_F & A^T \\ \hline O & M_s \end{pmatrix} \begin{pmatrix} \ddot{P} \\ \ddot{U} \end{pmatrix} + \begin{pmatrix} \tilde{K}_F & O \\ \hline -A & K_s + K_g \end{pmatrix} \begin{pmatrix} P \\ U \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (1)$$

with P corresponding to surface and interior pressures of the fluid, U corresponds to structural deformation of the containing structure and the free surface of the fluid. The matrix partitions are:

$\tilde{M}_F, \tilde{K}_F$ : Fluid generalized "mass" and "stiffness" matrices

$A, A^T$ : Fluid generalized surface area matrices

$K_g$ : Fluid bounding surface gravity stiffness matrix associated with slosh modes

$M_s, K_s$ : Containing structure mass and stiffness matrices

It should be noted that in the current NASTRAN analysis, the pressure variables are in terms of circumferential harmonics (e.g.,  $P(r, z, \theta) = P_0(r, z) + \sum_{n=1}^N [P_n(r, z) \cos n\theta + P_n^*(r, z) \sin n\theta]$ ); and the structural deformations are discrete as the structural idealization is truly a finite element one. Thus, the matrix partitions described above are internally derived in NASTRAN in a consistent manner. In the present development it is convenient to align the system variables as follows:



$$\begin{bmatrix} P \\ U \end{bmatrix} = \begin{bmatrix} P_f \\ P_s \\ P_I \\ U_F \\ U_s \\ U_e \end{bmatrix} = \begin{bmatrix} \text{free surface pressures} \\ \text{structural interface pressures} \\ \text{internal fluid pressures} \\ \text{free surface displacements} \\ \text{structural displacements} \\ \text{extra DOF's*} \end{bmatrix} \quad (2)$$

The NASTRAN generated matrices will occupy the following locations:

$$\begin{bmatrix} \tilde{M}_F & A_b^T \\ 0 & M_s \end{bmatrix} = \begin{matrix} & P_f & P_s & P_I & U_f & U_s & U_e \\ \begin{bmatrix} \tilde{M}_{ff} & \tilde{M}_{fs} & \tilde{M}_{fI} & A_{ff}^T & A_{sf}^T & \\ \tilde{M}_{sf} & \tilde{M}_{ss} & \tilde{M}_{sI} & A_{fs}^T & A_{ss}^T & \\ \tilde{M}_{If} & \tilde{M}_{Is} & \tilde{M}_{II} & & & \\ & & & & & \\ & & & & & \\ & & & & & \end{bmatrix} & P_f \\ & P_s \\ & P_I \\ & U_f \\ & U_s \\ & U_e \end{matrix} \quad (3)$$

\*To be defined later.

$$\left[ \begin{array}{c|c} \tilde{K}_f & 0 \\ \hline -A_b & K_s + K_g \end{array} \right] =$$

$P_f$	$P_s$	$P_I$	$U_f$	$U_s$	$U_e$	
$\tilde{K}_{ff}$	$\tilde{K}_{fs}$	$\tilde{K}_{fI}$				$P_f$
$\tilde{K}_{sf}$	$\tilde{K}_{ss}$	$\tilde{K}_{sI}$				$P_s$
$\tilde{K}_{If}$	$\tilde{K}_{Is}$	$\tilde{K}_{II}$				$P_I$
$-A_{ff}$	$-A_{fs}$		$K_{gff}$	$K_{gfs}$		$U_f$
$-A_{sf}$	$-A_{ss}$		$K_{gsf}$	$K_s + K_{gss}$		$U_s$
						$U_e$

(4)

The matrix partitions are in general quite sparse.

The fundamental assumption in this analysis is that the fluid compressability is negligible (i.e., bulk modulus,  $B \rightarrow \infty$ ). In such a case, the fluid generalized "mass" matrix (see NASTRAN Theoretical Manual 16.1),

$$\tilde{M}_f \sim \frac{1}{B} \rightarrow 0 \quad (5)$$

Thus the pressure dynamic equations and the structural dynamic equations reduce to:

$$- \begin{bmatrix} A_{ff}^T & A_{sf}^T \\ A_{fs}^T & A_{ss}^T \\ 0 & 0 \end{bmatrix} \begin{bmatrix} \ddot{U}_f \\ \ddot{U}_s \end{bmatrix} = \begin{bmatrix} \tilde{K}_{ff} & \tilde{K}_{fs} & \tilde{K}_{fI} \\ \tilde{K}_{sf} & \tilde{K}_{ss} & \tilde{K}_{sI} \\ \tilde{K}_{If} & \tilde{K}_{Is} & \tilde{K}_{II} \end{bmatrix} \begin{bmatrix} P_f \\ P_s \\ P_I \end{bmatrix} \quad (6)$$

$$- \begin{bmatrix} A_{ff} & A_{fs} & 0 \\ A_{sf} & A_{ss} & 0 \end{bmatrix} \begin{bmatrix} P_f \\ P_s \\ P_I' \end{bmatrix} + \begin{bmatrix} 0 & 0 \\ 0 & M_s \end{bmatrix} \begin{bmatrix} \ddot{U}_f \\ \ddot{U}_s \end{bmatrix} + \begin{bmatrix} K_{gff} & K_{gfs} \\ K_{gsf} & K_{gss} + K_s \end{bmatrix} \begin{bmatrix} U_f \\ U_s \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \end{bmatrix} \quad (7)$$

As a result of the incompressibility of the fluid, the internal pressures are dependent on the boundary (free surface and structural interface\*) pressures (see previous section of this appendix, "Modification of the NASTRAN Hydroelastic Analysis"). Thus:

$$P_I = -\tilde{K}_{II}^{-1} (\tilde{K}_{If} \mid \tilde{K}_{Is}) \begin{Bmatrix} P_f \\ P_s \end{Bmatrix} \quad (8)$$

and

$$\begin{bmatrix} \tilde{K}'_{ff} & \tilde{K}'_{fs} \\ \tilde{K}'_{sf} & \tilde{K}'_{ss} \end{bmatrix} \begin{Bmatrix} P_f \\ P_s \end{Bmatrix} = - \begin{bmatrix} A_{ff}^T & A_{sf}^T \\ A_{fs}^T & A_{ss}^T \end{bmatrix} \begin{Bmatrix} \ddot{U}_f \\ \ddot{U}_s \end{Bmatrix} \quad (9a)$$

---

\*Note: In this analysis, free surface pressures are defined as structural interface pressures in the NASTRAN input data. See Equations 32 through 34 at the end of this section.

with

$$\begin{bmatrix} \tilde{K}'_{ff} & \tilde{K}'_{fs} \\ \tilde{K}'_{sf} & \tilde{K}'_{ss} \end{bmatrix} = \begin{bmatrix} \tilde{K}_{ff} & \tilde{K}_{fs} \\ \tilde{K}_{sf} & \tilde{K}_{ss} \end{bmatrix} - \begin{bmatrix} \tilde{K}_{fI} \\ \tilde{K}_{sI} \end{bmatrix} \left[ \tilde{K}_{II} \right]^{-1} \begin{bmatrix} \tilde{K}_{If} & \tilde{K}_{Is} \end{bmatrix} \quad (9b)$$

The reduced stiffness matrix in Eq. 9a is singular because one pressure state is indeterminate due to incompressibility. The indeterminate pressure state is uniform pressure; the fluid does not deform in this state.

Consider now the special case of zero free surface pressure (gravitational stiffness,  $K_g$ , neglected and low frequency slosh modes removed). Equation 9a becomes

$$P_f = 0 \quad (10a)$$

$$\tilde{K}'_{fs} P_s = -A_{ff}^T \ddot{U}_f - A_{sf}^T \ddot{U}_s \quad (10b)$$

$$\tilde{K}'_{ss} P_s = -A_{fs}^T \ddot{U}_s - A_{ss}^T \ddot{U}_s \quad (10c)$$

If  $U_f$  displacements are normal to the free surface, then  $A_{sf}^T = 0$ ,  $A_{fs}^T = 0$ . The matrix partition  $\tilde{K}'_{ss}$  is not singular and may now be inverted. \*

$$P_s = -\tilde{K}'_{ss}^{-1} A_{ss}^T \ddot{U}_s \quad (11a)$$

Substitution into Eq. 10b results in:

$$K'_{fs} \tilde{K}'_{ss}^{-1} A_{ss}^T \ddot{U}_s = A_{ff}^T \ddot{U}_f \quad (11b)$$

---

\*Note: A uniform pressure state does not exist in this special case  $P_f = 0$ .

and if  $U_f$  consists of outward normal displacements only (tangential displacements SPC'd) then

$$U_f = A_{ff}^{-T} \tilde{K}'_{fs} \tilde{K}'_{ss}^{-1} A_{ss}^T U_s \quad (11c)$$

is the kinematic relationship between structural interface and free surface displacements.

Now consider the structural dynamic equation, 7, which in this special case reduces to

$$-A_{ss} P_s + M_s \ddot{U}_s + K_s U_s = 0 \quad (12)$$

Substitution of Eq. 11a into Eq. 12 results in

$$(M_s + M_f) \left\{ \ddot{U}_s \right\} + K_s U_s = 0 \quad (13a)$$

with the fluid mass matrix

$$M_f = A_{ss} \tilde{K}'_{ss}^{-1} A_{ss}^T \quad (13b)$$

In order to make the above formulation consistent, the fluid displacements are expressed in terms of circumferential harmonics as are the pressures. This is accomplished by the transformation

$$U_s = T_{se} U_e \quad (14)$$

and the dynamic equations reduce to

$$(M_{se} + M_{fe}) \ddot{U}_e + K_{se} U_e = 0 \quad (15a)$$

with

$$M_{se} = T_{se}^T M_s T_{se} \quad (15b)$$

$$M_{fe} = (T_{se}^T A_{ss}) K_{ss}^{-1} (A_{ss}^T T_{se}) \quad (15c)$$

$$K_{se} = T_{se}^T K_s T_{se} \quad (15d)$$

with pressure recovery from Eq. 11a

$$P_s = -K_{ss}'^{-1} (A_{ss}^T T_{se}) \ddot{U}_e \quad (15e)$$

and with free surface displacement recovery from Eq. 11c

$$A_{ff}^{-T} \tilde{K}_{fs}' \tilde{K}_{ss}'^{-1} (A_{ss}^T T_{se}) U_e = U_f \quad (15f)$$

Now considering the more general case of a free surface with gravitational stiffness, it is convenient to first express the reduced pressure relationship in Eq. 9a and the structural dynamics in Eq. 7 in terms of the circumferential harmonic displacement set defined in Eq. 14

$$\begin{bmatrix} \tilde{K}_{ff}' & \tilde{K}_{fs}' \\ \tilde{K}_{sf}' & \tilde{K}_{ss}' \end{bmatrix} \begin{Bmatrix} P_f \\ P_s \end{Bmatrix} = - \begin{bmatrix} A_{fe}^T & 0 \\ 0 & A_{se}^T \end{bmatrix} \begin{Bmatrix} \ddot{U}_{fe} \\ \ddot{U}_{se} \end{Bmatrix} \quad (16a)$$

$$\begin{bmatrix} A_{fe} & 0 \\ 0 & A_{se} \end{bmatrix} \begin{Bmatrix} P_f \\ P_s \end{Bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & M_s \end{bmatrix} \begin{Bmatrix} \ddot{U}_{fe} \\ \ddot{U}_{se} \end{Bmatrix} + \begin{bmatrix} K_{ffe} & 0 \\ 0 & K_{se} + K_{ge} \end{bmatrix} \begin{Bmatrix} U_{se} \\ U_{fe} \end{Bmatrix} \quad (16b)$$

It should be noted that the  $U_{fe}$  displacements are normal to the free

surface, thus the area matrix and gravity stiffness matrix uncouple, i.e.,

$$A_{fs} = A_{sf} = 0 \text{ and } K_{gsf} = K_{gfs} = 0$$

The "generalized fluid stiffness" matrix in Eq. 16a is singular, and in this general case, the singularity is removed by artificially setting one pressure to zero and one outward normal flow to zero. In particular, the zeroth harmonic pressure and outward normal displacement for the first nodal circle on the free surface are set to zero artificially. This artificial set of constraints is equivalent to removing the redundant uniform pressure and applying the incompressibility constraint as discussed in Appendix B1. In order to expose the ramifications of these constraints, a partitioned set of dynamic equations must be written as follows

$$\begin{Bmatrix} P_f \\ P_s \end{Bmatrix} = \begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix}, \quad \begin{Bmatrix} U_{fe} \\ U_{se} \end{Bmatrix} = \begin{Bmatrix} U_{e1} \\ U_{e2} \end{Bmatrix} \quad (17)$$

where  $P_1$  is the zeroth harmonic pressure to be nulled and  $U_{e1}$  is the corresponding displacement to be nulled;  $P_2$  and  $U_2$  comprise the sets of remaining variables.

Equations 16a and 16b are rewritten in the current partitioned form as

$$\begin{bmatrix} \tilde{K}'_{11} & \tilde{K}'_{12} \\ \tilde{K}'_{21} & \tilde{K}'_{22} \end{bmatrix} \begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} = - \begin{bmatrix} A_{11}^T & 0 \\ 0 & A_{22}^T \end{bmatrix} \begin{Bmatrix} \ddot{U}_{e1} \\ \ddot{U}_{e2} \end{Bmatrix} \quad (18a)$$

$$- \begin{bmatrix} A_{11} & 0 \\ 0 & A_{22} \end{bmatrix} \begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} + \begin{bmatrix} 0 & 0 \\ 0 & M_{e22} \end{bmatrix} \begin{Bmatrix} \ddot{U}_{e1} \\ \ddot{U}_{e2} \end{Bmatrix} + \begin{bmatrix} K_{e11} & 0 \\ 0 & K_{e22} \end{bmatrix} \begin{Bmatrix} U_{e1} \\ U_{e2} \end{Bmatrix} = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix} \quad (18b)$$

By artificially setting  $P_1 = 0$ , the partitions of Eq. 18a read\*,

$$\tilde{K}'_{12} P_2 = -A_{11}^T \ddot{U}_{e1} \quad (19a)$$

$$\tilde{K}'_{22} P_2 = -A_{22}^T \ddot{U}_{e2} \quad (19b)$$

By solving for the pressure deviations Eq. 19b we obtain

$$P_2 = -\tilde{K}'_{22}{}^{-1} A_{22}^T \ddot{U}_{e2} \quad (20a)$$

Substitution of this result into Eq. 19a, yields the kinematic relationship between  $U_{e1}$  and the remaining set of displacements  $U_{e2}$  for the incompressible fluid.

$$A_{11}^T U_{e1} = \tilde{K}'_{12} \tilde{K}'_{22}{}^{-1} A_{22}^T U_{e2} \quad (20b)$$

or

$$U_{e1} = A_{11}^{-T} \tilde{K}'_{12} \tilde{K}'_{22}{}^{-1} A_{22}^T U_{e2} \quad (20c)$$

This result is analogous to the displacement recovery relationship of Eq. 15f. Further examination of Eq. 20b reveals the constraint on outward normal flow accelerations is

$$\begin{Bmatrix} I_1 \\ I_2 \end{Bmatrix} = \begin{pmatrix} \tilde{K}'_{12} & \tilde{K}'_{22}{}^{-1} \\ \hline & I \end{pmatrix} \begin{Bmatrix} I_2 \end{Bmatrix} \quad (21a)$$

---

\*Note: According to Appendix B1,  $P_2$  represents the set of pressure deviations,  $P_i - P_1$  for the zeroth harmonic only.



with

$$I_1 = A_{11}^T \ddot{U}_{e_1}; I_2 = A_{22}^T \ddot{U}_{e_2} \quad (21b)$$

This is essentially the transformation on pressures which expresses them as the reference pressure and pressure deviations in Appendix B1. The transformations (formulated in reverse order to those of Appendix B1 are

$$\begin{Bmatrix} 0 \\ I_2 \end{Bmatrix} = \begin{pmatrix} 1 & C \\ 0 & -I \end{pmatrix} \begin{Bmatrix} I_1 \\ I_2 \end{Bmatrix} \quad (22a)$$

$$\begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} = \begin{pmatrix} 1 & 0 \\ C^T & -I \end{pmatrix} \begin{Bmatrix} P_1 \\ P'_2 \end{Bmatrix} \quad (22b)$$

where  $P'_2$  are the pressure deviations and

$$C = -\tilde{K}'_{12} \tilde{K}'_{22}{}^{-1} \quad (22c)$$

$$C^T = -\tilde{K}'_{22}{}^{-1} \tilde{K}'_{21} \quad (22d)$$

From Eq. 21b, Eq. 18a becomes

$$\begin{pmatrix} \tilde{K}'_{11} & \tilde{K}'_{12} \\ \tilde{K}'_{21} & \tilde{K}'_{22} \end{pmatrix} \begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} = - \begin{Bmatrix} I_1 \\ I_2 \end{Bmatrix} \quad (23a)$$

Solving Eq. 22a for  $\begin{Bmatrix} I_1 \\ I_2 \end{Bmatrix}$  and substituting into the foregoing equation, with Eq. 22b, leads to

$$\begin{pmatrix} \tilde{K}'_{11} + \tilde{K}'_{12}C^T + C\tilde{K}'_{21} + C\tilde{K}'_{22}C^T & 0 \\ 0 & \tilde{K}'_{22} \end{pmatrix} \begin{Bmatrix} P_1 \\ P'_2 \end{Bmatrix} = - \begin{Bmatrix} 0 \\ I_2 \end{Bmatrix} \quad (23b)$$

Solving for the partition to be nulled,

$$\left[ \tilde{K}'_{11} + \tilde{K}'_{12}C^T + C\tilde{K}'_{21} + C\tilde{K}'_{22}C^T \right] \{P_1\} = 0 \quad (23c)$$

from which

$$\tilde{K}'_{11} + C\tilde{K}'_{21} + \tilde{K}'_{12}C^T + C\tilde{K}'_{22}C^T = 0 \quad (23d)$$

Hence, Eq. 23b becomes

$$\begin{pmatrix} 0 & | & 0 \\ \hline 0 & | & K'_{22} \end{pmatrix} \begin{Bmatrix} P_1 \\ P_2 \end{Bmatrix} = - \begin{Bmatrix} 0 \\ I_2 \end{Bmatrix} \quad (23e)$$

due to the singular nature of the "fluid generalized stiffness" matrix (see Appendix B1 for details). We are therefore left with a set of fluid equations in terms of pressure deviations only.

$$\begin{pmatrix} K'_{22} \end{pmatrix} \begin{Bmatrix} P'_2 \end{Bmatrix} = \begin{Bmatrix} -I_2 \end{Bmatrix} = -A_{22}^{T\ddot{}} \ddot{U}_{e_2} \quad (24)$$

Now consider Eq. 18b and apply Eq. 20c as a constraint

$$\begin{Bmatrix} U_{e_1} \\ U_{e_2} \end{Bmatrix} = \begin{pmatrix} \Gamma \\ I \end{pmatrix} \begin{Bmatrix} U_{e_2} \end{Bmatrix} \quad (25a)$$

and apply Eq. 22b as a pressure transformation with

$$\Gamma = A_{11}^{-T} \tilde{K}'_{12} \tilde{K}'_{22}^{-1} A_{22}^T \quad (25b)$$

The resulting set of structural dynamic equations is

$$\begin{aligned} & - \begin{bmatrix} \Gamma^T & | & -I \end{bmatrix} \begin{bmatrix} A_{11} & | & \\ \hline & | & A_{22} \end{bmatrix} \begin{bmatrix} 1 & | & 0 \\ \hline C^T & | & -I \end{bmatrix} \begin{Bmatrix} P_1 \\ P'_2 \end{Bmatrix} \\ & + \begin{bmatrix} \Gamma^T & | & -I \end{bmatrix} \begin{bmatrix} 0 & | & 0 \\ \hline 0 & | & M_{e_{22}} \end{bmatrix} \begin{bmatrix} \Gamma \\ -I \end{bmatrix} \begin{Bmatrix} \ddot{U}_{e_2} \end{Bmatrix} \\ & + \begin{bmatrix} \Gamma^T & | & -I \end{bmatrix} \begin{bmatrix} K_{e_{11}} & | & \\ \hline 0 & | & K_{e_{22}} \end{bmatrix} \begin{bmatrix} \Gamma \\ -I \end{bmatrix} \begin{Bmatrix} U_{e_2} \end{Bmatrix} = \begin{Bmatrix} 0 \\ 0 \end{Bmatrix} \end{aligned} \quad (26a)$$

$$-\left[ \begin{array}{c|c} \Gamma A_{11}^T + A_{22} C^T & A_{22} \end{array} \right] \begin{bmatrix} P_1 \\ P'_2 \end{bmatrix} + M_{e22} \ddot{U}_{e2} + K_{e22} U_{e2} + \Gamma^T K_{e11} \Gamma U_{e2} = 0 \quad (26b)$$

rearranging terms

$$\Gamma^T \left[ -A_{11} P_1 + K_{e11} \Gamma U_{e2} \right] - A_{22} C^T P_1 - A_{22} P'_2 + M_{e22} \ddot{U}_{e2} + K_{e22} U_{e2} = 0 \quad (26c)$$

By noting Eq. 25 and the first element in equation 18b, the bracketed term in Eq. 26c is null, i.e.,

$$P_1 = A_{11}^{-1} K_{e11} U_{e1} = A_{11}^{-1} K_{e11} \Gamma U_{e2} \quad (27)$$

Substitution of Eq. 27 into Eq. 26c results in

$$\left[ -A_{22} C^T A_{11}^{-1} K_{e11} \Gamma \right] U_{e2} - A_{22} P'_2 + M_{e22} \ddot{U}_{e2} + K_{e22} U_{e2} = 0 \quad (28)$$

Utilizing Eq. 22d and Eq. 25b,

$$-A_{22} C^T A_{11}^{-1} K_{e11} \Gamma = (A_{22} \tilde{K}'_{22}{}^{-1} \tilde{K}'_{21} A_{11}^{-1}) K_{e11} (A_{11}^{-T} \tilde{K}'_{12} \tilde{K}'_{22}{}^{-1} A_{22}^T) = \Delta K_{e22} \quad (29)$$

which is a symmetric matrix. The result is

$$M_{e22} \ddot{U}_{e2} + \left[ K_{e22} + \Delta K_{e22} \right] \left\{ U_{e2} \right\} - A_{22} P'_2 = 0 \quad (30)$$

Solving for  $P'_2$  in Eq. 24 and substituting the result into Eq. 30 yields

$$\left[ M_{e22} + \Delta M_{e22} \right] \left\{ \ddot{U}_{e2} \right\} + \left[ K_{e22} + \Delta K_{e22} \right] \left\{ U_{e2} \right\} = \left\{ 0 \right\} \quad (31a)$$

with the fluid mass matrix defined as

$$\Delta M_{e22} = A_{22} \tilde{K}'_{22}{}^{-1} A_{22}^T \quad (31b)$$

Equation 31a is a symmetric structural dynamic type equation solvable by standard modal techniques.

Displacement recovery is obtained through Eq. 25 and pressure recovery is obtained through Eq. 27 and Eq. 22b.

## Equivalence of Free Surface Gravitational Stiffness and the NASTRAN Free Surface Representation

In the presently available NASTRAN hydroelastic analysis, representation of free surface effects due to gravity is in terms of the free surface pressure (NASTRAN Theoretical Manual 16.1.32). This is convenient because free surface displacements are not introduced in the analysis. Consider now a case where displacements of the free surface are defined as "structural" grid points. According to Eq. 6 in the NASTRAN Theoretical Manual p16.1.28, the surface force perturbation due to motion of the free surface is

$$\begin{aligned} F_{gi} &= -\rho g \int_{S_i} U_{zi} dS \\ &= -\rho g S_i U_{zi} = -K_{gii} U_{zi} \end{aligned} \quad (32)$$

This expression for free surface\* stiffness is well known.

Examination of Eq. 11 in the NASTRAN Theoretical Manual reveals that

$$I_{si} = S_i \ddot{U}_z = -\frac{S_i}{\rho g} \ddot{P}_i \quad (33)$$

or

$$P_i = -\rho g U_{zi}$$

By multiplying the pressure in Eq. 33 by the elemental surface area, the surface force perturbation

$$F_i = S_i P_i = -\rho g S_i U_{zi} \quad (34)$$

is obtained which is exactly the same as that defined in Eq. 32 for a "structural" grid defined free surface.

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\*The pressure fluctuation at the free surface is measured at the undisturbed location; the pressure fluctuation at the disturbed free surface location is zero.

B2.2 MODIFICATION OF THE NASTRAN HYDROELASTIC ANALYSIS - NASTRAN PROGRAM OPERATIONS

The strategy used in the proposed modification is to utilize the modules in Rigid Format 7 to generate the fluid matrix data, consisting of:

- Fluid mass matrix
- Fluid boundary gravitational stiffness matrix\*
- Displacement recovery matrix data
- Pressure recovery matrix data.

This matrix data is output onto cards or tape and used as input data for a Rigid Format 3 normal modes analysis. In Rigid Format 3 the containing structure is defined in terms of the same DOF's as the fluid model. The fluid mass matrix and gravity stiffness matrix\* are added to the structural mass and stiffness matrices, respectively, thus formulating a symmetric eigenvalue problem in terms of displacements. Once the modal displacement data is established, dependent displacement and pressure (modal) data is recovered by way of the recovery matrices input from Rigid Format 7 output data.

The NASTRAN Rigid Format 7 operations to be performed are as follows:

- Form the "g" set matrices based on bulk data input (incompressible fluid)

$M_{gg} =$

P	U	Ue	
			P
			U
			Ue

$K_{gg} =$ 

P	U	Ue	
$\sim K$			P
			U
			Ue

-----  
\*Not required where g = 0.

- Form the multipoint constraint (MPC) equations as follows:

$$U = \begin{Bmatrix} U_T \\ U_S \end{Bmatrix};$$

$$U_T = T_e u_e \text{ (harmonic transformation)}$$

$U_S$  = DOF's to be SPC'd, plus structural  
DOF's to be omitted in the Rigid  
Format 3 step

$$M_{nn} = \begin{array}{ccc|c} & P & U_s & U_e \\ \hline & & & P \\ \hline & & & U_s \\ \hline & & & U_e \\ \hline \end{array}$$

$$K_{nn} = \begin{array}{ccc|c} & \tilde{K} & & P \\ \hline & & & U_s \\ \hline & & & U_e \\ \hline P & U_s & U_e & \end{array}$$

- Apply single point constraints (SPC) -

$$\{U_s\} = 0$$

$$M_{ff} = \begin{array}{cc|c} & P & U_e \\ \hline & & P \\ \hline & & U_e \\ \hline \end{array}$$

$$K_{ff} = \begin{array}{cc|c} & P & U_e \\ \hline & \tilde{K} & P \\ \hline & & U_e \\ \hline \end{array}$$

- Omit (reduce out) internal pressures by Guyan Reduction

$$P = \begin{Bmatrix} P_1 \\ \hline P_2 \\ \hline P_I \end{Bmatrix} \quad \{P_I\} \text{ is the "0" set internal pressure partition}$$

$$M_{aa} = \begin{array}{ccc|c} P_1 & P_2 & U_e & \\ \hline & & & P_1 \\ \hline & & & P_2 \\ \hline & & & U_e \end{array} \quad K_{aa} = \begin{array}{ccc|c} P_1 & P_2 & U_e & \\ \hline & \tilde{K}' & & P_1 \\ \hline & & & P_2 \\ \hline & & & U_e \end{array}$$

- Generate surface area and gravity stiffness matrices (MXTRIN) in "g" set DOF's

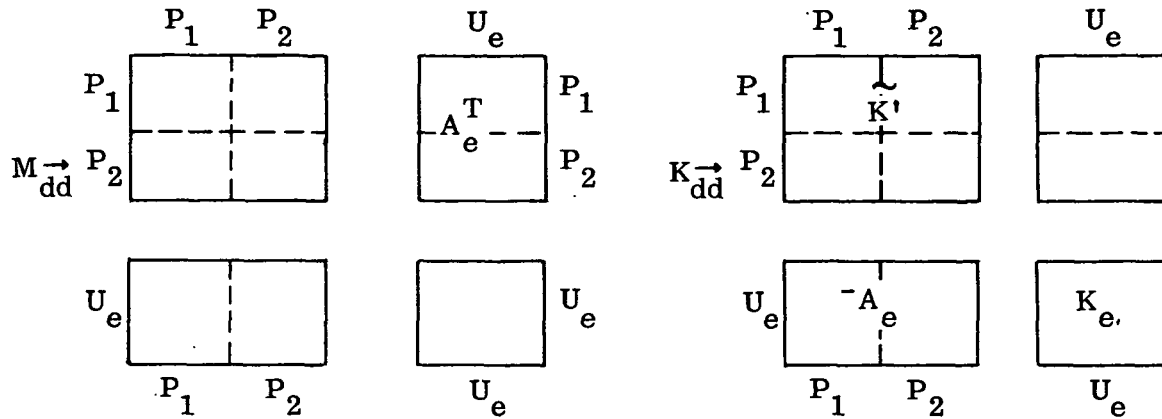
$$A = \begin{array}{ccc|c} P & U & U_e & \\ \hline & & & P \\ \hline A & & & U \\ \hline & & & U_e \end{array} \quad K_g = \begin{array}{ccc|c} P & U & U_e & \\ \hline & & & P \\ \hline & K_g & & U \\ \hline & & & U_e \end{array}$$

- GKAD: Recalls the transformation utilized in reduction from the "g" set to the "a" set. It performs the unsymmetric reductions on the MXTRIN generated matrices and merges these with  $M_{aa}$  and  $K_{aa}$  resulting in

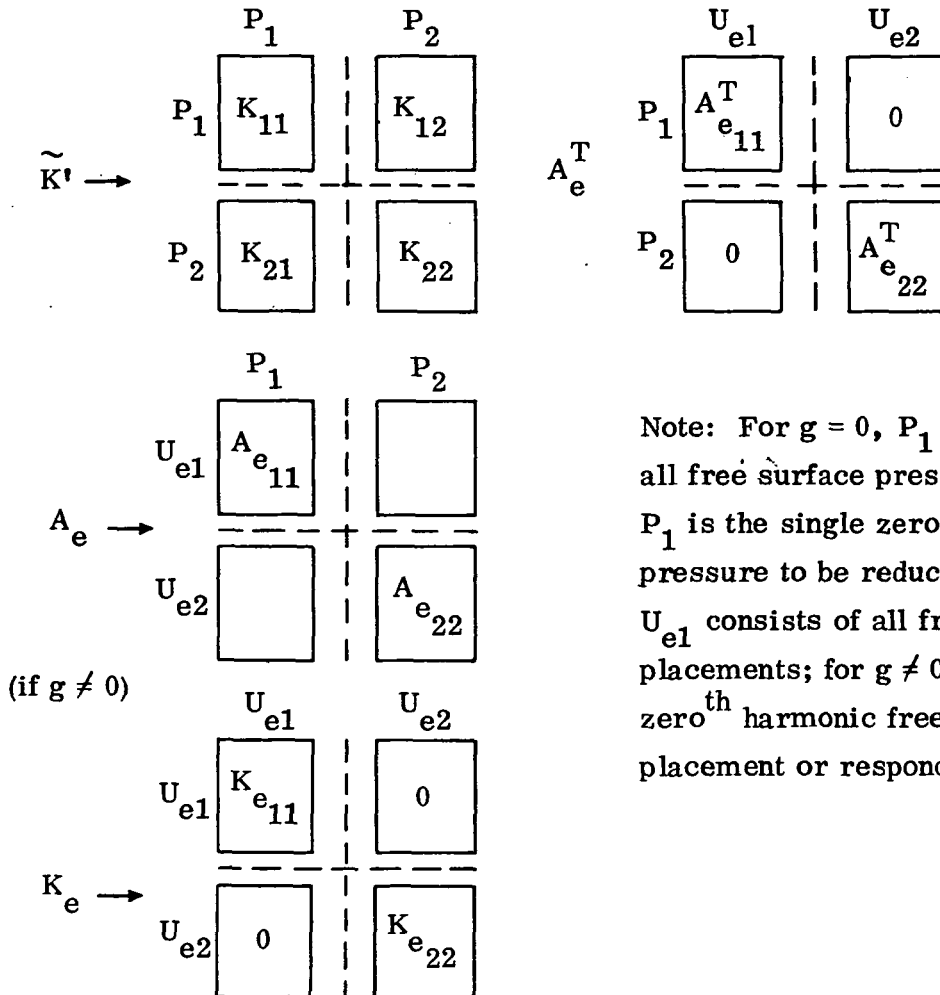
$$M_{dd} = \begin{array}{ccc|c} P_1 & P_2 & U_e & \\ \hline & & & P_1 \\ \hline & & A_e^T & P_2 \\ \hline & & & U_e \end{array} \quad K_{dd} = \begin{array}{ccc|c} P_1 & P_2 & U_e & \\ \hline & \tilde{K}' & & P_1 \\ \hline & & & P_2 \\ \hline -A_e & & K_e^* & U_e \end{array}$$

( \* $K_e$  is null when gravity effects are neglected;  $g = 0$  )

- Utilizing (PARTN), partition of  $M_{dd}$  and  $K_{dd}$  matrices as follows:



- Perform further partitioning operations as follows:



Note: For  $g = 0$ ,  $P_1$  consists of all free surface pressures, for  $g \neq 0$ ,  $P_1$  is the single zero<sup>th</sup> harmonic pressure to be reduced. For  $g = 0$ ,  $U_{e1}$  consists of all free surface displacements; for  $g \neq 0$ ,  $U_{e1}$  is the zero<sup>th</sup> harmonic free surface displacement or responding to  $P_1$ .



- Solve for the pressure deviation recovery matrix utilizing (SOLVE)

$$M_1 = \tilde{K}_{22}'^{-1} A_{e_{22}}^T (P_2' = M_1 \ddot{U}_{e_2})$$

- Perform the matrix multiplications to form the fluid mass matrix utilizing (MPYAD)

$$\Delta M_{e_{22}} = A_{e_{22}} M_1 = A_{e_{22}} \tilde{K}_{22}'^{-1} A_{e_{22}}^T$$

- Solve (SOLVE)

$$M_2 = A_{e_{11}}^{-1} \tilde{K}_{12}'$$

- Perform the multiplications to form the displacement recovery matrix (MPYAD)

$$\Gamma = M_2 M_1 (U_{e_1} = \Gamma U_{e_2})$$

- Utilizing OUTPUT 1 (for tape) or OUTPUT 3 (for punch, DMI format) form the output data blocks

$$\Delta M_{e_{22}}, M_1, \Gamma$$

- If  $g = 0$ , utilize an EXIT statement to terminate the run
- Utilize (TRNSP\$) -

$$\Gamma \rightarrow \Gamma^T$$

- Perform a series multiply-add operation (SMPYAD) to form the reduced gravity stiffness matrix

$$K_{e_b} = \Gamma^T K_{e_{11}} \Gamma + K_{e_{22}}$$

- Solve for the pressure recovery matrix (SOLVE) -

$$C^T = K_{22}'^{-1} \tilde{K}_{21}' \quad \left( \begin{array}{l} P_1 = K_{e_{11}} U_{e_1} \\ P_2 = C^T P_1 + P_2' \end{array} \right)$$

- Utilize OUTPUT 1 or OUTPUT 3 to form the output data blocks

$$K_{e_b}, K_{e_{11}}, C^T$$

- EXIT

The NASTRAN Rigid Format 3 Operations to be performed are as follows:

- Form "g" set matrices based on bulk data input (structural data)

$$M_{gg} = \begin{array}{cc} & \begin{array}{c} U_{g_o} \quad U_{e_o} \end{array} \\ \begin{array}{c} U_{g_o} \\ U_{e_o} \end{array} & \begin{array}{|c|c|} \hline M_{g_o} & \\ \hline & \\ \hline \end{array} \end{array} \quad K_{gg} = \begin{array}{cc} & \begin{array}{c} U_{g_o} \quad U_{e_o} \end{array} \\ \begin{array}{c} U_{g_o} \\ U_{e_o} \end{array} & \begin{array}{|c|c|} \hline K_{g_o} & \\ \hline & \\ \hline \end{array} \end{array}$$

- Form the MPC equations as follows:

$$U_{g_o} = T_{e_o} U_{e_o} \text{ (harmonic transformation)}$$

$$M_{nn} = \begin{array}{c} U_{e_o} \\ \boxed{M_{nn}} \\ U_{e_o} \end{array} \quad K_{nn} = \begin{array}{c} U_{e_o} \\ \boxed{K_{nn}} \\ U_{e_o} \end{array}$$

- Apply single point constraints

$$U_{e_o} = \left\{ \begin{array}{c} U_e \\ U_s \\ U_o \end{array} \right\} = \left\{ \begin{array}{l} \text{"a" set structural disp.} \\ \text{"s" set structural disp.} \\ \text{"o" set structural disp.} \end{array} \right\}$$

$$M_{ff} = \begin{array}{cc} & \begin{array}{c} U_e \quad U_o \end{array} \\ \begin{array}{c} U_e \\ U_o \end{array} & \begin{array}{|c|c|} \hline M_{aa} & M_{ao} \\ \hline M_{oa} & M_{oo} \\ \hline \end{array} \end{array} \quad K_{ff} = \begin{array}{cc} & \begin{array}{c} U_e \quad U_o \end{array} \\ \begin{array}{c} U_e \\ U_o \end{array} & \begin{array}{|c|c|} \hline K_{aa} & K_{ao} \\ \hline K_{oa} & K_{oo} \\ \hline \end{array} \end{array}$$

- Apply Guyan Reduction resulting in reduced structural mass and stiffness matrices in terms of  $U_e$  (the "a" set) compatible with  $U_e$  in Rigid Format 7.

$$\begin{bmatrix} M_{aa} \end{bmatrix} , \begin{bmatrix} K_{aa} \end{bmatrix}$$

- Utilize INPUT 1 or INPUT 3 statements to read in matrix data as needed.

(a)  $\Delta M_{e22}, M_1, \Gamma$

(b)  $K_{eb}, K_{e11}, C^T$  (if  $g \neq 0$ )

- Utilizing (ADD) form the hydroelastic mass matrix

$$M_e = M_{aa} + \Delta M_{e22}$$

- If  $g \neq 0$  utilize (ADD) to form the hydroelastic stiffness matrix

$$K_e = K_{aa} + K_{eb}$$

(If  $g = 0, K_e = K_{aa}$ )

- Perform the real eigenvalue analysis on  $M_e, K_e$  and obtain:

-  $PHIA = \phi_e$  ("a" set eigenvectors)

- Eigenvalues,  $\lambda = \omega^2$  and natural frequencies,  $\omega$

-  $PHIG = \phi_g$  ("g" set eigenvectors)

-  $MI$  = generalized mass matrix

- Since the eigenvalues are in table rather than matrix form, an eigenvalue matrix must be calculated by

-  $SMPYAD: KI = \phi_e^T K_e \phi_e$

-  $SOLVE: (-\lambda) \approx MI^{-1} KI$  (should have small off diag. terms)

- The modal pressure deviations are now solved for by (SMPYAD) -

If  $g = 0$  these are the actual pressures

$$P'_{2\phi} = \begin{bmatrix} M_1 \end{bmatrix} \begin{bmatrix} \lambda \end{bmatrix} \begin{bmatrix} \phi_e \end{bmatrix}$$

- The fluid displacement(s) are recovered by (MPYAD) in modal form

$$\Phi_{e_1} = \Gamma \Phi_e$$

- If  $g = 0$ , insert an EXIT statement
- The reduced out pressure,  $P_1$ , in modal form is solved for by (MPYAD)

$$P_{1\Phi} = K e_{11} \Phi_{e_1}$$

- The remaining modal pressures,  $P_2$ , in modal form are solved for by (MPYAD)

$$P_{2\Phi} = \begin{bmatrix} C^T \end{bmatrix} P_{1\Phi} + P'_{2\Phi}.$$

### B2.3 HARMONIC REDUCTION IN FINITE ELEMENT SHELL ANALYSIS

Summary - A matrix reduction technique based on assumed circumferential harmonic displacement distribution for geometrically axisymmetric shells has been investigated. The technique was introduced to produce kinematic consistency in the NASTRAN hydroelastic analysis.

A spherical cap was taken as a typical structure. Natural frequencies and mode shapes were calculated by the STARS program, Guyan reduction, and "harmonic reduction"; the latter two utilizing NASTRAN Rigid Format 3. By taking the STARS results as exact, it was concluded that "harmonic reduction" is more efficient than Guyan reduction for the problems of interest. The current results indicate that twice the accuracy with half the cpu time is achievable with harmonic reduction (e.g., harmonic - 5% accuracy, 238 cpu sec, Guyan 12% accuracy, 531 cpu sec).

Analytical Development - The current NASTRAN hydroelastic analysis consists of a fluid representation in terms of a discrete meridional grid with circumferential harmonics. The structural representation is in terms of a discrete finite element grid; the fluid and structure interact in terms of mixed grid system.

A more consistent hydroelastic grid representation can be realized by substitution of a circumferential harmonic displacement distribution for the structure, e.g., in spherical coordinates

$$\begin{aligned}
U_r(r_i, \theta_j, \phi_k) &= U_{r0}(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ U_{rn}(r_i, \theta_j) \cos n\phi_k + U_{rn}^*(r_i, \theta_j) \sin n\phi_k \right]
\end{aligned} \tag{1a}$$

$$\begin{aligned}
U_\theta(r_i, \theta_j, \phi_k) &= U_{\theta0}(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ U_{\theta n}(r_i, \theta_j) \cos n\phi_k + U_{\theta n}^*(r_i, \theta_j) \sin n\phi_k \right]
\end{aligned} \tag{1b}$$

$$\begin{aligned}
U_\phi(r_i, \theta_j, \phi_k) &= U_{\phi0}^*(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ U_{\phi n}(r_i, \theta_j) \sin n\phi_k + U_{\phi n}^*(r_i, \theta_j) \cos n\phi_k \right]
\end{aligned} \tag{1c}$$

$$\begin{aligned}
\omega_r(r_i, \theta_j, \phi_k) &= \omega_{r0}^*(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ \omega_{rn}(r_i, \theta_j) \sin n\phi_k + \omega_{rn}^*(r_i, \theta_j) \cos n\phi_k \right]
\end{aligned} \tag{1d}$$

$$\begin{aligned}
\omega_\theta(r_i, \theta_j, \phi_k) &= \omega_{\theta0}^*(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ \omega_{\theta n}(r_i, \theta_j) \sin n\phi_k + \omega_{\theta n}^*(r_i, \theta_j) \cos n\phi_k \right]
\end{aligned}$$

$$\begin{aligned}
\omega_\phi(r_i, \theta_j, \phi_k) &= \omega_{\phi0}(r_i, \theta_j) \\
&+ \sum_{n=1}^N \left[ \omega_{\phi n}(r_i, \theta_j) \cos n\phi_k + \omega_{\phi n}^*(r_i, \theta_j) \sin n\phi_k \right]
\end{aligned} \tag{1e}$$

-----  
\*Note: Symmetric and antisymmetric displacement and pressure distribution are represented by unstarred and starred variables, respectively. All rigid body motions are represented by the above displacement distribution.

The corresponding fluid pressure distribution is

$$P(r_i, \theta_j, \phi_k) = P_o(r_i, \theta_j) + \sum_{n=1}^N [P_n(r_i, \theta_j) \cos n\phi_k + P_n^*(r_i, \theta_j) \sin n\phi_k]$$

The accuracy of the harmonic reduction scheme was tested on a spherical cap of uniform thickness without fluid (Fig. B-1). A modal grid consisting of 20 circumferential divisions in a semi-circle and 10 meridional divisions was chosen resulting in a 1266 DOF "g set" structural model (Fig. B-2). Three circumferential harmonics (0, 1, 2) were chosen for harmonic reduction; this is accomplished by definition of 180 during structural harmonic DOF and MPC data in NASTRAN. It should be noted that the apex node is left in terms of rectangular coordinates since the polar DOF's ( $\theta, \phi$ ) have no meaning at this node. After application of fixed base boundary condition ( $U_1 = \dots = U_6 = 0 @ \theta = 60^\circ$ ) and symmetric kinematic constraints at the pole ( $\theta = 0 \text{ deg}$ ) the reduced structural model consists of a 138 DOF "f set". A further Guyan reduction omitting all but the radial and meridional displacements at the harmonic nodes and omitting the non-zero displacements at the pole yields a 72 DOF "a set". Natural frequencies and the first 15 modes were calculated by the Givens method.

The results of the above strategy were then compared to STARS results assumed exact. In addition, NASTRAN results utilizing various Guyan reduction strategies (Fig. B-3 and B-4) were compared to the STARS and harmonic reduction results.

DISCUSSION OF RESULTS - A comparison of natural frequency results (Table B-1) indicates that the overall accuracy of the 72 DOF harmonic reduction results is better than the 190 DOF Guyan reduction results. The quantities  $\Delta_1$  are representative of fractional frequency errors and  $\Delta_2$ , the frequency squared errors, are representative of mode shape errors. Comparisons of the first two axisymmetric mode shapes (Fig. B-5) indicate that although frequencies are rather accurate, mode shapes may contain significantly worse errors ( $\Delta_2 > \Delta_1$ , for  $\Delta_1 \ll 1$ ,  $\Delta_2 \approx 2\Delta_1$ ). Mode shapes resulting from harmonic reduction are clearly more accurate than those from Guyan reduction.

-----  
 \*Note: Symmetric and antisymmetric displacement and pressure distribution are represented by unstarred and starred variables, respectively. All rigid body motions are represented by the above displacement distribution.

All of the above results indicate an anomaly which consists of a "dimple" in modal deflection at the apex. This difficulty is due to the finite element idealization. "Fixes" to this problem are currently being studied.

Another aspect of the harmonic reduction technique is its relative cost efficiency. Comparison of harmonic and Guyan reduction cpu times (Table B-2) indicate a significantly lower reduction cpu time for harmonic reduction. This is attributed to elimination of a large scale matrix decomposition characteristic of Guyan reduction and to the fact that less DOF's are required for comparable accuracy (e.g., harmonic 72 DOF - 5% accuracy versus Guyan 190 DOF - 12% accuracy). The cpu time associated with eigen analysis of the harmonic analysis "a set" is naturally much less than that associated with the Guyan reduction "a set".

In the case of the current structural model, circumferential harmonics were uncoupled due to the axisymmetry of shell thickness. In cases where thickness varies with circumferential location ( $\theta$ ) harmonics will be coupled. The degree of coupling is a function of the relative abruptness or smoothness of thickness distribution and the degree of thickness asymmetry. In addition, in hydroelastic problems with a tilted free surface, harmonics will also couple. In spite of this coupling, harmonic reduction should be more efficient than Guyan reduction.

#### B2.4 PRELIMINARY STUDY OF THE SHELL APEX ANOMALY IN FINITE ELEMENT MODELING

A number of finite element idealizations were studied (utilizing the 60 deg spherical cap with fixed base) in order to identify the source, and correct the apex anomaly. Previously calculated modes utilizing STARS as reference and harmonic reduction, revealed the anomaly. The following additional modal results were calculated:

- (1) Modes based on harmonic reduction of a model with a fine apex grid; the meridional grid is 0, 3, 6, 13, 20, 27, 34, 41, 48, 54, 60 deg (the previous model grid is 0, 6, 12, 18, ....., 48, 54, 60 deg). The apex DOF's were reduced out in the analysis set as in the case of the previous harmonic reduction model.

- (2) Modes based on a model with a fine overall meridional grid which consists of 0, 3, 6, 9, 12 deg, ... (3 deg intervals) ....., 54, 57, 60 deg. A 9 deg circumferential sector was taken with symmetric boundary conditions applied to yield only axisymmetric modes. The apex DOF was reduced out in the analysis set.
- (3) Same as (2) with the apex retained in the analysis set.

Some suggested sources of the anomaly previous to the current study are:

- Improper mass distribution in the apex triangular elements
- Inaccuracies in high aspect ratio triangular finite elements (i.e., 9 deg wedges in the current case) regarding assumed displacement distributions.

A comparison of modal frequencies is presented in Table B-3 with  $\Delta_2$  representing averaged mode shape errors. A comparison of mode shapes for the first two axisymmetric modes is presented in Fig. B-6; modal results for case (3) are not shown since they are nearly identical to those of case (2).

The numerical results presented in Table B-3 are presented in order of increasing accuracy. The slight numerical improvement, due to a finer apex vicinity grid, (and the associated modes in Fig. B-6) illustrate that the anomaly is not significantly alleviated by a localized "fix". The apex dimple in the axisymmetric modes is eliminated by this fix; but the overall mode shapes are not improved. Significant improvement in the numerical results (frequencies and  $\omega^2$ ) and mode shapes is realized by use of an overall finer grid. In this case, the apex anomaly is eliminated, and overall mode shape quality is improved. The above results indicate that the apex anomaly may be an indicator of more than just a localized problem.

Finally, the case of a model with a finer grid with the apex DOF retained in the analysis set (with its slight numerical improvement over the corresponding results with the apex omitted) indicates that the mass distribution in the triangular apex elements does not lead to inaccuracies.



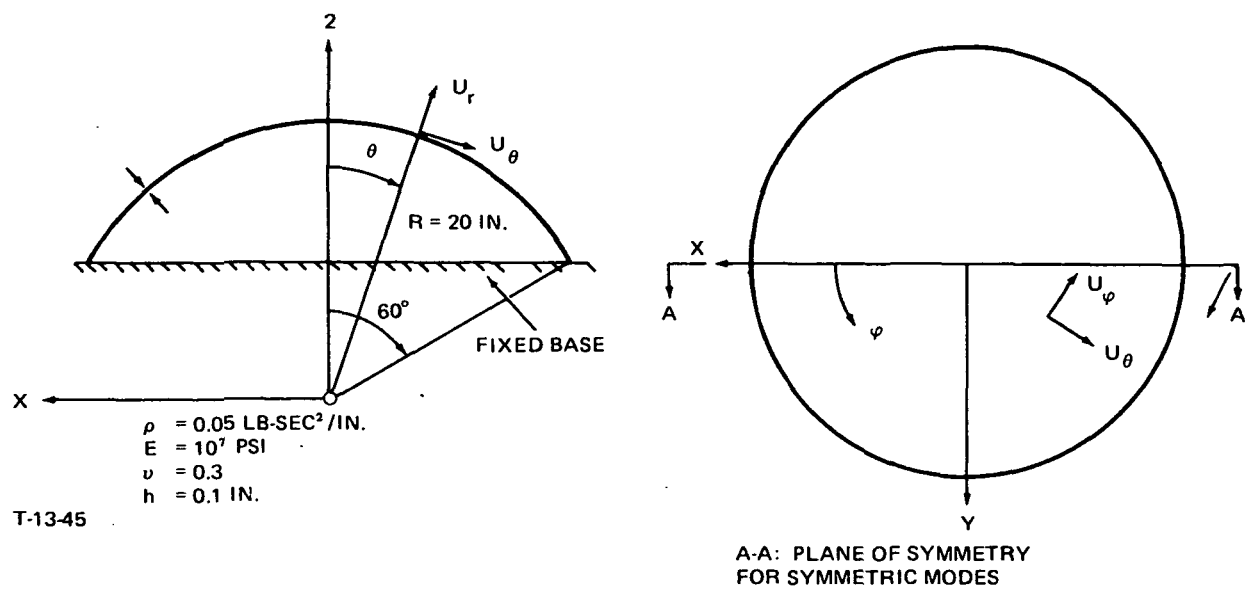


Fig. B-1 Spherical Cap Geometry

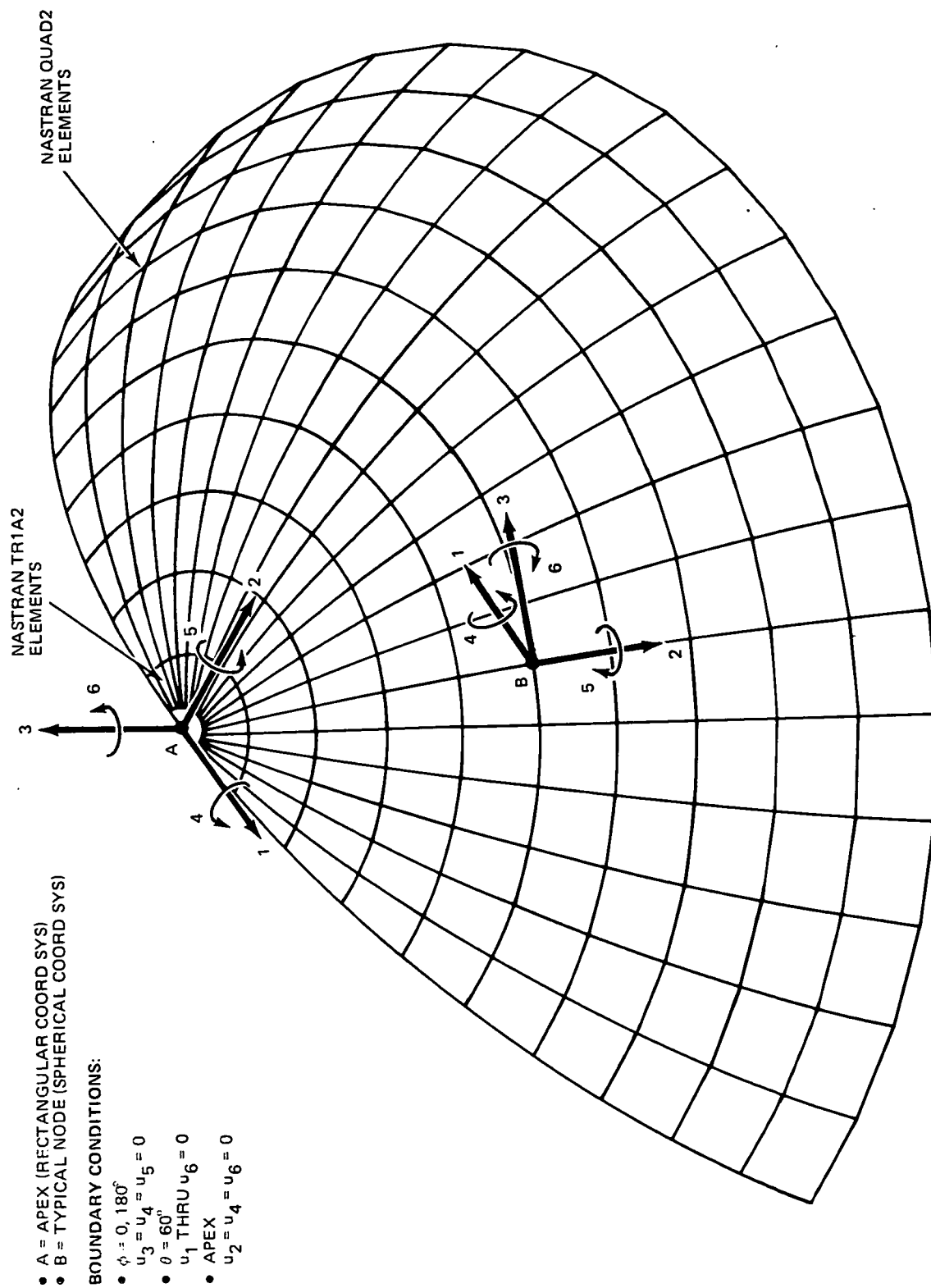


Fig. B-2 Structural Model

T13-46

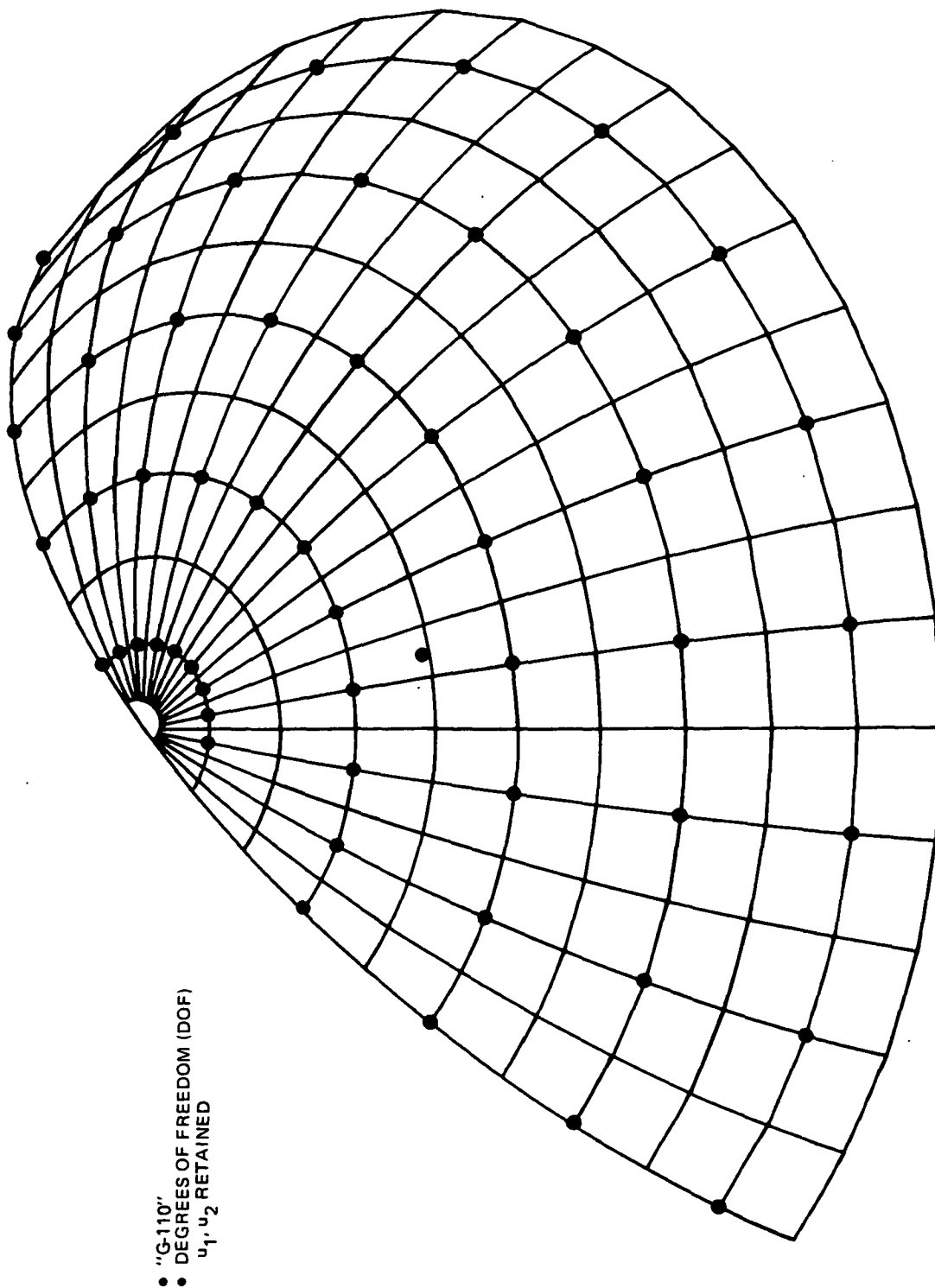


Fig. B-3 Analysis Set Nodes for Guyan Reduction

T13-47

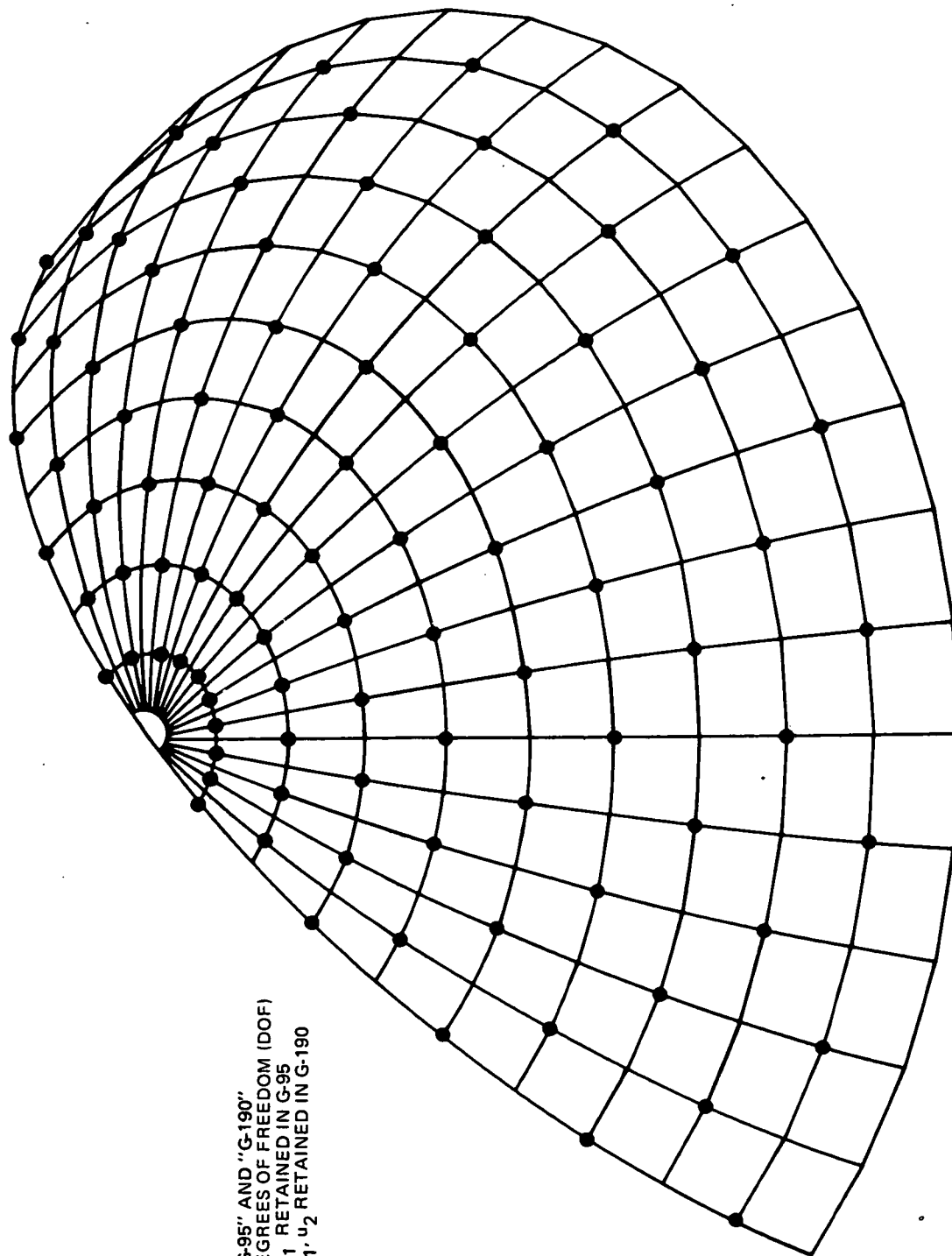


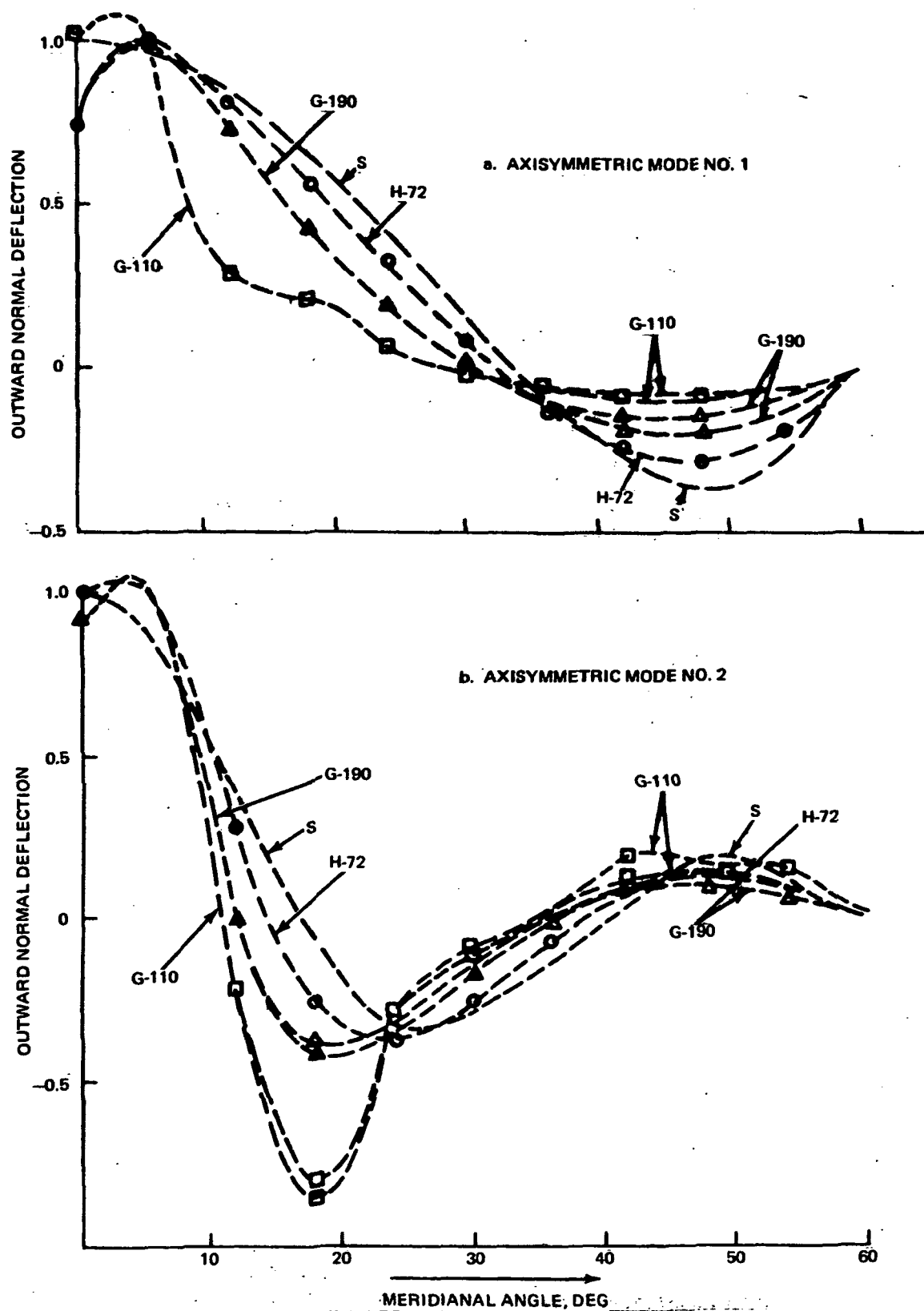
Fig. B-4 Analysis Set Nodes for Guyan Reduction

Table B-1 Comparison of Modal Frequencies

$$\Delta_1 = \omega/\omega_s^{-1}, \Delta_2 = (\omega/\omega_s)^2 - 1.$$

Mode		STARS	Harm. Red. H-72			Guyan Red. G-110			Guyan Red. G-95			Guyan Red. G-190		
M	N	$\Omega_s$	$\Omega$	$\Delta_1$	$\Delta_2$	$\Omega$	$\Delta_1$	$\Delta_2$	$\Omega$	$\Delta_1$	$\Delta_2$	$\Omega$	$\Delta_1$	$\Delta_2$
1	0	637	647	0.015	0.030	682	0.071	0.146	664	0.042	0.085	656	0.029	0.060
2		697	700	0.004	0.008	734	0.053	0.109	717	0.030	0.060	711	0.020	0.041
3		720	732	0.016	0.033	815	0.132	0.281	767	0.065	0.135	757	0.051	0.105
4		760	778	0.023	0.047	—	—	—	—	—	—	—	—	—
5		820	843	0.028	0.057	—	—	—	—	—	—	—	—	—
1	1	611	616	0.008	0.016	679	0.111	0.235	670	0.096	0.200	640	0.047	0.096
2		687	696	0.012	0.024	768	0.118	0.250	725	0.054	0.111	713	0.037	0.075
3		715	726	0.015	0.030	807	0.129	0.274	759	0.062	0.127	747	0.045	0.092
4		738	760	0.029	0.060	827	0.121	0.256	769	0.041	0.085	793	0.074	0.153
5		810	810	—	—	—	—	—	805	—0.006	—0.012	—	—	—
1	2	684	700	0.023	0.047	800	0.170	0.368	732	0.070	0.146	730	0.067	0.138
2		711	731	0.029	0.060	825	0.160	0.346	813	0.144	0.308	764	0.075	0.156
3		742	762	0.027	0.055	869	0.171	0.372	—	—	—	804	0.084	0.175
4		765	801	0.060	0.123	—	—	—	—	—	—	—	—	—
5		831	861	0.036	0.074	—	—	—	—	—	—	—	—	—
1	3	694	—	—	—	841	0.212	0.468	757	0.091	0.191	755	0.088	0.184
2		714	—	—	—	846	0.185	0.404	792	0.109	0.230	788	0.103	0.217
1	4	—	—	—	—	867	—	—	781	—	—	779	—	—
2		—	—	—	—	879	—	—	814	—	—	811	—	—
1	5	—	—	—	—	—	—	—	803	—	—	801	—	—

T13-15(T)



T1349

Fig. B-5 60° Spherical Cap — Fixed Base Mode Shape Comparisons

**Table B-2 Modal Accuracy/CPU Time Comparisons  
(400K Core)**

	Set Name	Harmonic-72	Guyan-110	Guyan-95	Guyan-190
Coordinate Set Sizes	G	1446	1266	1266	1266
	K <sub>G</sub> Semi-Bandwidth	138	138	138	138
	M	1260	0	0	0
	N	186i	1266	1266	1266
	F	138	1083	1083	1083
	A	72	110	95	190
	O	66	973	988	893
Operation Name					
Reduction Operation Times (CPU Sec)	IFP	29	4	4	4
	GP4	55	3	3	3
	MCE1	1	0	0	0
	MCE2	35	0	0	0
	SCE1	1	6	5	5
	SMP1	3	138	129	170
	SMP2	3	47	39	107
	Total Reduction CPU	127	198	180	289
Givens Method (CPU Sec)	READ (All Eigenvalues)	9	24	18	86
	SDR1 (15 Vectors)	6	14	13	18
	Total Givens CPU	15	38	31	104
	Total Above Operations	142	236	211	393
	Total Misc. Operations	96	110	117	138
	Total CPU	238	346	328	531
	Accuracy Factor (1)	0.053	0.276	0.149	0.117
	Cost Factor (2)	1.00	1.45	1.38	2.23
	<div> <div> <math display="block">(1) \quad \sum_{i=1}^N \sqrt{[(\omega_i/\omega_{Si})^2 - 1]^2} / N</math> </div> <div> <math display="block">(2) \quad T/T_{H-72} \text{ (CPU Time Ratio)}</math> </div> </div>				

T13-16(T)

Table B-3 Comparison of Modal Frequencies  
 $(\Delta_1 = \omega/\omega_g - 1, \Delta_2 = (\omega/\omega_g)^2 - 1)$

		STARS		Harm. Red. H-72			Harm-Red. H-72			Axisym Fine Grid			Axisym Fine Grid			Apex Retained in "A" Set		
M	N	$\omega_g$	$\omega$	$\Delta_1$	$\Delta_2$	$\omega$	$\Delta_1$	$\Delta_2$	$\omega$	$\Delta_1$	$\Delta_2$	$\omega$	$\Delta_1$	$\Delta_2$	$\omega$	$\Delta_1$	$\Delta_2$	
1	0	637.4	646.8	0.015	0.030	640.6	0.005	0.010	646.1	0.014	0.027	646.0	0.013	0.027	646.0	0.013	0.027	
2	0	696.8	699.5	0.004	0.008	683.9	-0.018	-0.037	700.3	0.005	0.010	699.7	0.004	0.008	699.7	0.004	0.008	
3	0	719.9	731.6	0.016	0.033	725.7	0.008	0.016	730.4	0.015	0.029	729.9	0.014	0.028	729.9	0.014	0.028	
4	0	760.1	777.5	0.023	0.046	773.8	0.018	0.036	772.1	0.016	0.032	771.6	0.015	0.030	771.6	0.015	0.030	
5	0	819.9	842.6	0.028	0.056	839.6	0.024	0.049	830.1	0.012	0.025	829.4	0.012	0.023	829.4	0.012	0.023	

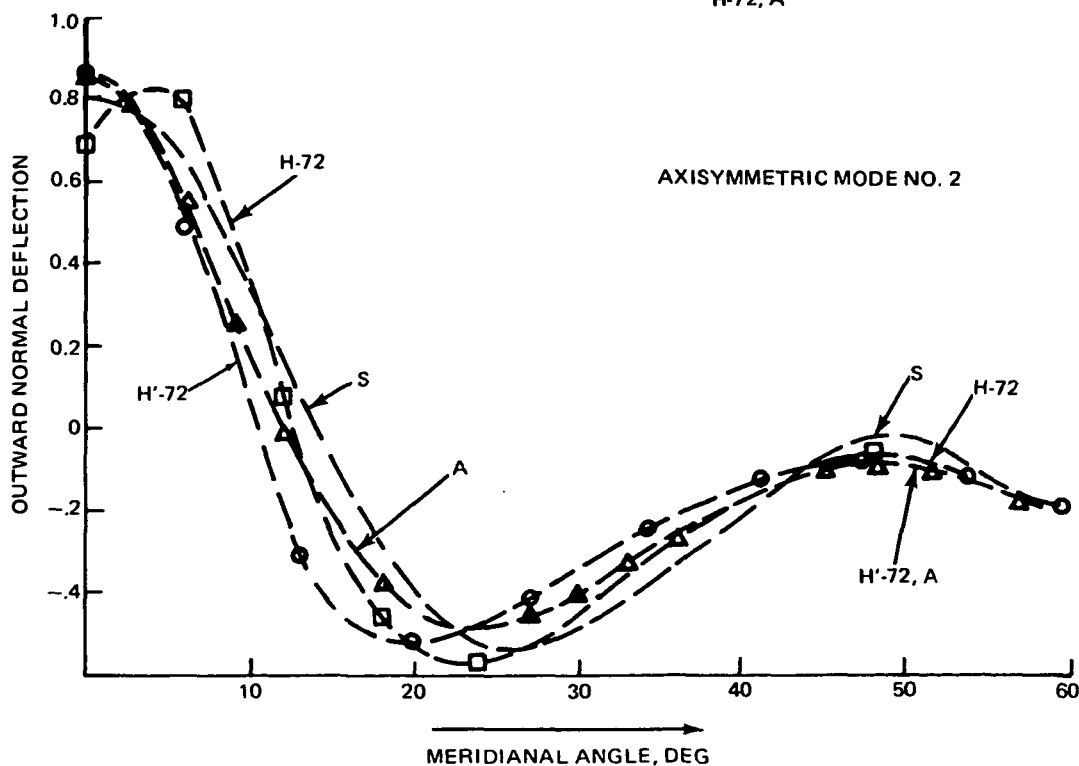
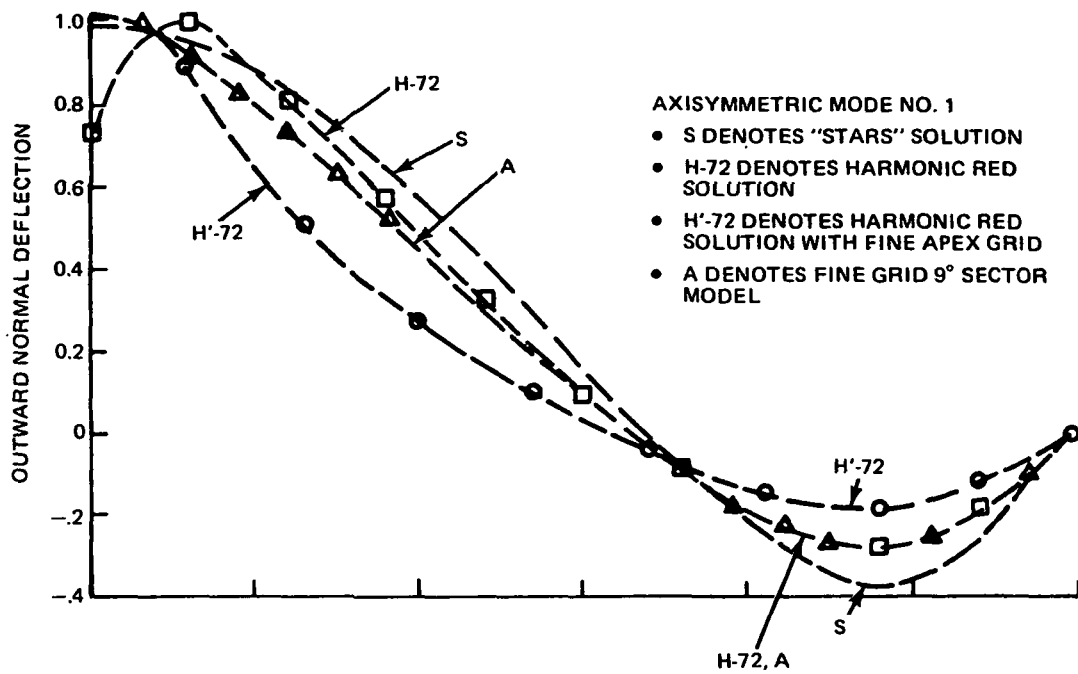
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RMS $\Delta_2$ Error	0.017	0.015	0.012	0.011
MAS $\Delta_2$ Error	0.056	0.049	0.032	0.030

T13-17(T)

RMS $\Delta_2$ Error	0.017	0.015	0.012	0.011
MAS $\Delta_2$ Error	0.058	0.049	0.032	0.030





T13-50 Fig. B-6 60° Spherical Cap — Fixed Base Mode Shape Comparisons (Apex Study)

**Appendix B3**  
**ELEMENTARY VERIFICATION PROBLEMS**

◊

### B3 ELEMENTARY VERIFICATION PROBLEMS

The modified NASTRAN hydroelastic analysis has been verified on two basic problems. The problems consist of a fluid filled hemispherical container and a fluid filled circular cylindrical shell; exact analytical solutions are presented as reference results for verification purposes.

#### B3.1 Fluid Filled Hemispherical Container

This first problem consists of the fluid filled hemispherical container illustrated in Fig. B-7. The container is massless and follows the artificial structural law

$$P = \alpha U_r \quad (1)$$

The exact free vibration solution for this problem is expressed in terms of spherical harmonics. The modal displacements on the structural surface and free surface are

$$U_r = P_m^n (\cos \theta) \cos n\varphi \quad (2a)$$

$$U_\theta = \left(\frac{r}{R}\right)^{m-1} \frac{dP_m^n (\cos \theta)}{d\theta} \cos n\varphi \quad (2b)$$

respectively. The modal pressure function is

$$P = \frac{\rho_f + R \omega_{mn}^2}{m} \left(\frac{r}{R}\right)^m P_m^n (\cos \theta) \cos n\varphi \quad (3)$$

and the natural frequencies are

$$\omega_{mn} = \sqrt{\frac{M \alpha}{\rho_f R}} \quad (4)$$

The function  $P_m^n (\cos \theta)$  is the associated Legendre function for which  $m$  is the meridional wave index and  $n$  is the circumferential wave index. The allowable indices are such that the sum must be odd with  $m \geq n$ .

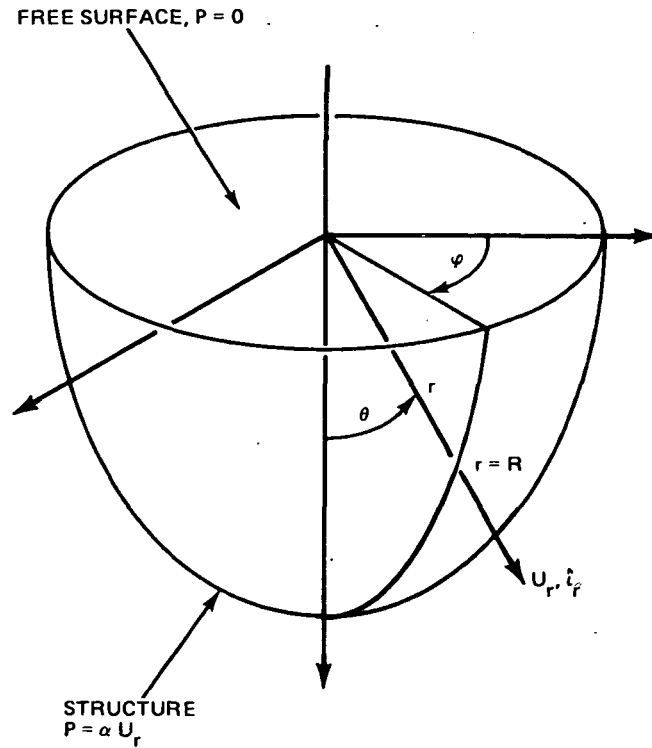


Fig. B-7 Fluid in a Hemispherical Container

The finite element model of the hemispherical fluid filled container is illustrated in Fig. B-8. As a result of the structural law (Eq. 1) the structural stiffness matrix is diagonal with entries

$$K_{ii} = \alpha A_i \quad (5)$$

where  $A_i$  is the area associated with the "ith" (radial) degree of freedom. All diagonal entries not associated with radial degrees of freedom are null. The fluid model is expressed in terms of the circumferential pressure harmonics  $n=0, 2, 4$  and the structural surface and free surface grids are reduced by harmonic reduction accordingly. The fluid mass matrix developed in the modified Rigid Format 7 version is expressed in terms of a 21 DOF analysis set of structural radial displacements (7 meridional locations, circumferential harmonics  $n = 0, 2, 4$ ).

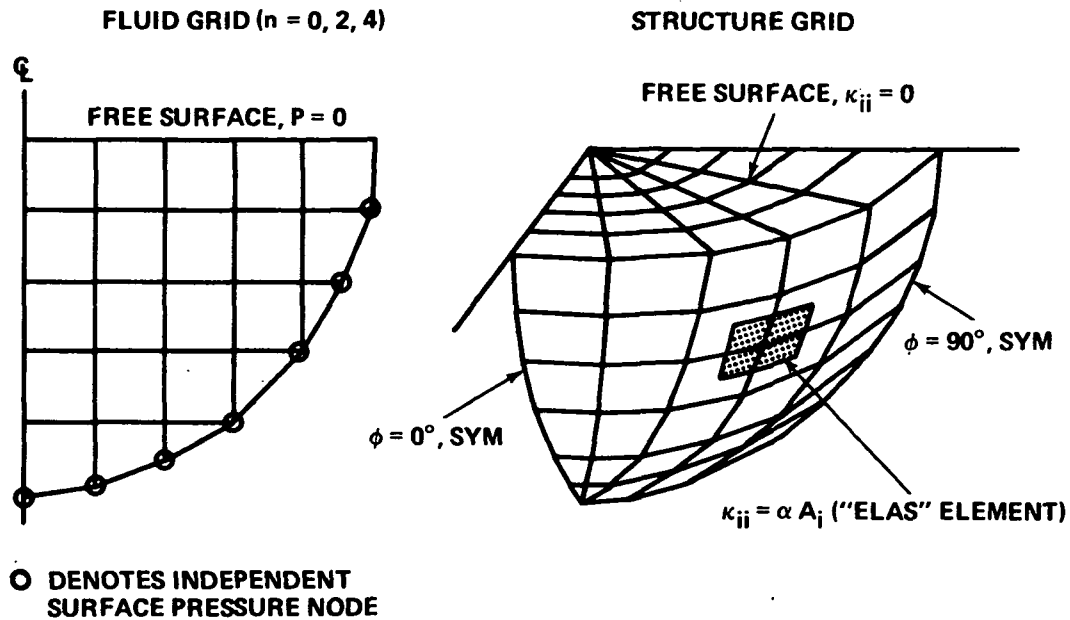


Fig. B-8 Fluid in a Hemispherical Container - Finite Element Model

Natural frequencies and mode shapes for the finite element model were calculated in Rigid Format 3 by the Givens method. A comparison of exact and NASTRAN calculated nondimensional natural frequencies is presented in Table B-4 and comparisons of selected modal displacement distributions are presented in Fig. B-9. In general the NASTRAN results are in excellent agreement with the exact solution; as expected in any finite element analysis the level of accuracy decreases with modal complexity.

### B3.2 Fluid Filled Circular Cylindrical Shell

The second verification problem consists of the fluid filled circular cylindrical shell illustrated in Fig. B-10. The shell structure is taken as one with bending as well as membrane stiffness. The geometric properties of the shell consist of a cylinder aspect ratio  $Z/R = 2$  and a thickness ratio  $h/R = 0.01$ . In addition, the fluid to structure density ratio is  $\rho_f / \rho_s = 1/3$  and the structural material Poisson ratio is  $\nu = 0.3$ .

Table B-4 Fluid in a Hemispherical Container Natural Frequency Comparisons

M	N = 0			N = 2			N = 4		
	EXACT*	NASTRAN	ERROR**	EXACT	NASTRAN	ERROR	EXACT	NASTRAN	ERROR
1	1	1	0	—	—	—	—	—	—
3	1.732	1.697	-0.02	1.732	1.886	0.089	—	—	—
5	2.236	2.193	-0.02	2.236	2.367	0.059	2.236	2.308	0.032
7	2.646	2.474	-0.065	2.646	2.714	0.026	2.646	2.698	0.020
9	3.000	2.875	-0.042	3.000	2.990	-0.003	3.000	2.844	-0.052
11	3.317	2.976	-0.103	3.317	3.272	-0.014	3.317	3.192	-0.038
13	3.606	3.000	-0.168	3.606	3.863	0.071	3.606	3.343	-0.073
15	3.872	.....	.....	3.872	.....	.....	3.872	4.940	0.276
17	4.123	.....	.....	4.123	.....	.....	4.123	.....	.....
* $\Omega_{\text{Exact}} = \sqrt{M}$ M, Odd > N ** Error = $\frac{\Omega_{\text{NASTRAN}}}{\Omega_{\text{Exact}}} - 1$									

An exact hydroelastic modal solution is known for an infinitely long cylinder which holds for the present problem when the structure is subjected to the boundary conditions

$$U_r = M_\theta = N_\theta = N_z = 0 \text{ (shear diaphragm) @ } z = Z, r = R \quad (6a)$$

$$P = 0 \text{ (free surface) @ } z = Z, r \leq R \quad (6b)$$

$$\frac{\partial U_r}{\partial z} = U_z = \frac{dM_z}{dz} = N_\theta = 0 \text{ (symmetry) @ } z = 0, r = R \quad (6c)$$

$$U_z = 0 \text{ (fixed bottom) @ } z = 0, r \leq R \quad (6d)$$

The exact free vibration solution is expressed in terms of cylindrical harmonics. The normalized modal displacements on the structural surface ( $r = R, 0 \leq z \leq Z$ ) and the free surface ( $r \leq R, z = Z$ ) are

$$U_r = \cos \frac{m\pi z}{2Z} \cos n\theta \quad (7a)$$

$$U_z = \frac{\left(\frac{m\pi}{2Z}\right) I_n\left(\frac{m\pi r}{2Z}\right)}{\frac{d}{dr} I_n\left(\frac{m\pi r}{2Z}\right) \Big|_{r=R}} \cos n\theta \quad (7b)$$

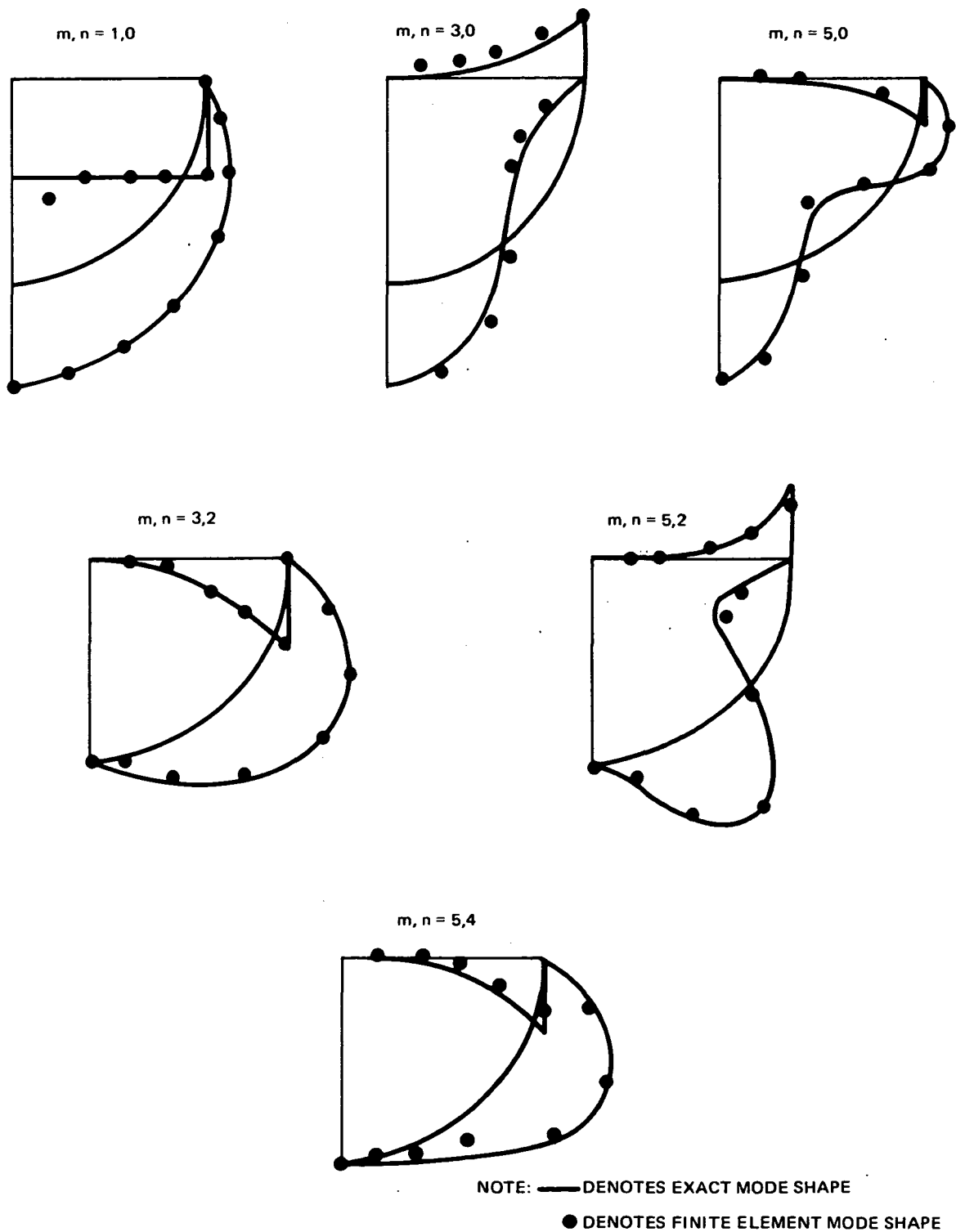


Fig. B-9 Fluid in Hemispherical Container — Mode Shape Comparisons

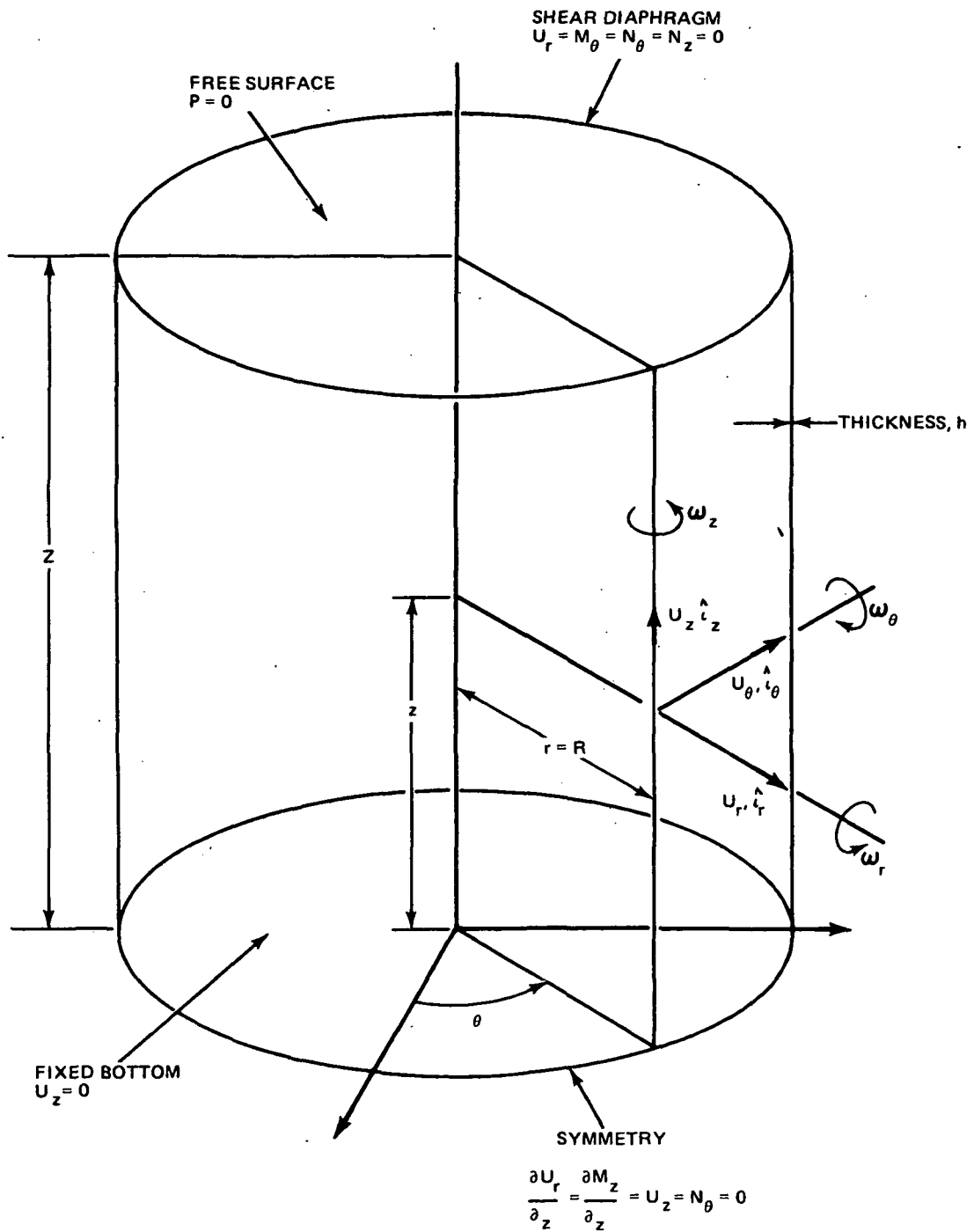


Fig. B-10 Fluid Filled Circular Cylindrical Shell



respectively where  $I_n\left(\frac{m\pi r}{2Z}\right)$  is a modified Bessel function. The modal pressure function on the structural surface is

$$P = \frac{\rho_f \omega_{mn}^2 I_n\left(\frac{m\pi R}{2Z}\right)}{\left(\frac{m\pi}{2Z}\right) \frac{d}{dr} I_n\left(\frac{m\pi r}{2Z}\right) \Big|_{r=R}} \cos n\theta \cos \frac{m\pi z}{2Z} \quad (8)$$

Noting that the structural deformation shape (Eq. 7a) is the same as for an empty cylinder, the hydroelastic natural frequencies are related to the empty structural frequencies  $\omega_{E_{mn}}$  as

$$\omega_{mn} = \frac{\omega_{E_{mn}}}{\sqrt{1 + \frac{pn_f}{m_s}}} \quad (9a)$$

where  $m_f$  and  $m_s$  represent the effective fluid and structural masses

$$m_f = \frac{\rho_f I_n\left(\frac{m\pi R}{2Z}\right)}{\left(\frac{m\pi}{2Z}\right) \frac{d}{dr} \left( I_n\left(\frac{m\pi r}{2Z}\right) \right) \Big|_{r=R}} \quad (9b)$$

$$m_s = \rho_s h \quad (9c)$$

The empty shell frequencies  $\omega_{E_{mn}}$  are known exactly on the basis of Flügge shell theory.

The finite element models of the shell and fluid are illustrated in Fig. B-11. The structural grid for the quarter shell consists of 924 DOF's and the fluid grid consists of 165 DOF's (55 nodes of revolution, circumferential harmonics  $n = 0, 2, 4$ ). Harmonic reduction data statements for the structure and fluid were generated by a MPC data generation program written specifically for the present problem; a general purpose program "HARM" written at a later date is presented in Appendix C6.

$$\left(\frac{L}{R}\right) = 2, \left(\frac{h}{R}\right) = .01, \rho_f/\rho_s = .333, \nu = .3$$

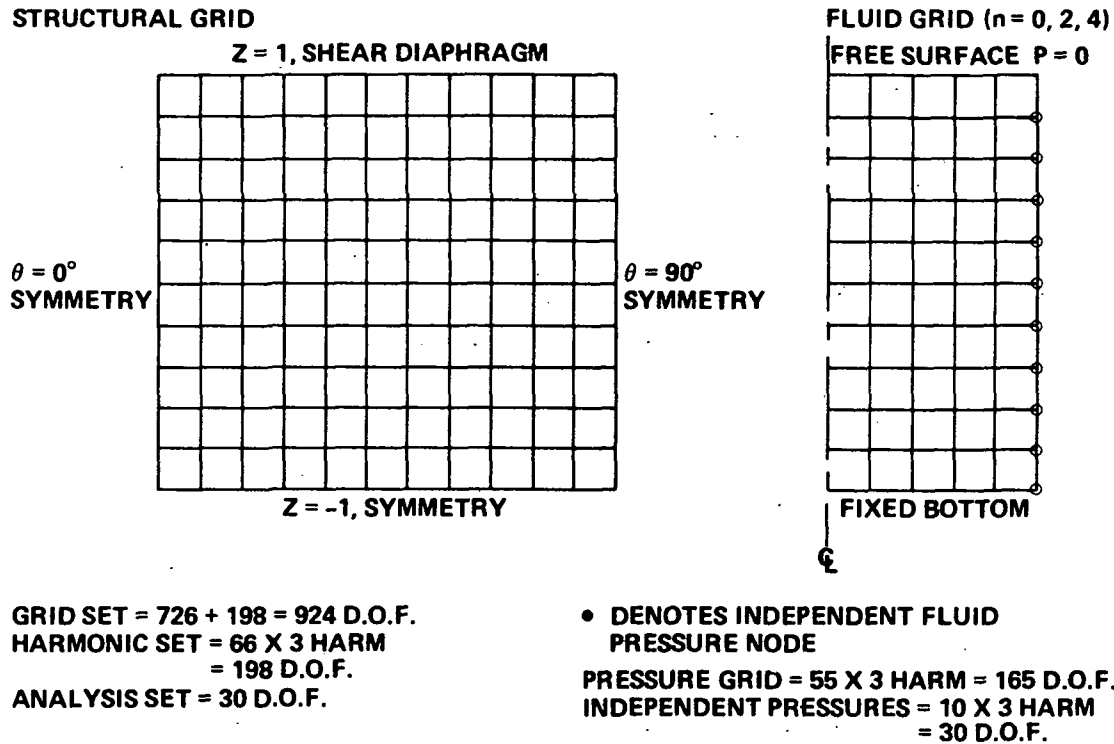


Fig. B-11 Circular Cylindrical Shell with Fluid - Finite Element Model

The harmonic transformation retaining harmonics  $n = 0, 2, 4$ , application of SPC's to enforce boundary conditions, and a mini-Guyan reduction retaining only radial displacements ultimately resulted in a 30 DOF analysis set. Listings of the Rigid Format 7 and Rigid Format 3 data for this problem are presented in Appendixes C2 and C3, respectively.

All natural frequencies and 25 mode shapes without and with the fluid included were calculated in Rigid Format 3 by the Givens method. The mode shapes in both cases were nearly identical to one another as concluded in the exact analysis. Selected mode shapes for the liquid filled case are illustrated in Fig. B-12. Frequency spectra for the empty and fluid filled shells are presented in Fig. B-13 illustrating excellent comparison between NASTRAN and exact results in both cases.

A quality of the modified NASTRAN hydroelastic analysis which is as significant as numerical accuracy is cost efficiency. On the Grumman IBM 370/165 computer the Rigid Format 3 solution time for the empty cylinder was 2 min 2 sec; for the fluid filled cylinder the Rigid Format 7 and 3 solution times were 1 min 15 sec and 2 min 6 sec, respectively. These computation times represent considerable cost savings for NASTRAN hydroelastic analysis and empty structure modal analysis.

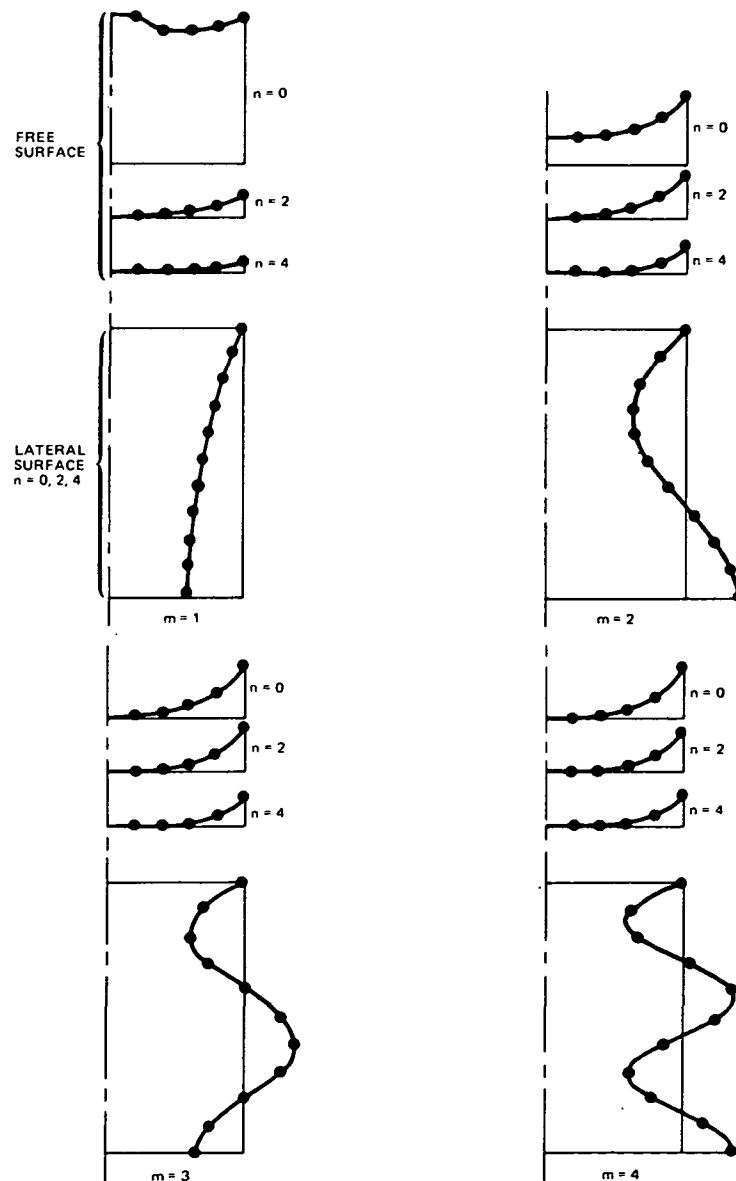
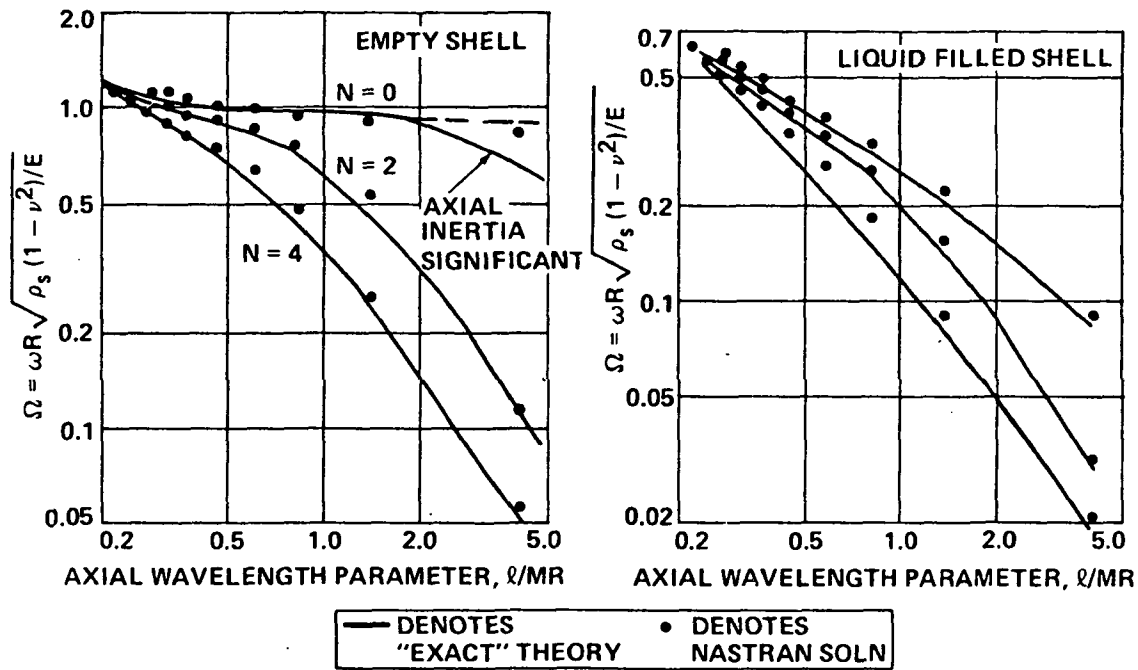


Fig. B-12 Circular Cylinder Hydroelastic Mode Shapes

$$\left(\frac{L}{R}\right) = 2, \left(\frac{h}{R}\right) = .01, \rho_f/\rho_s = .333, \nu = .3$$



NASTRAN SOLN CPU TIME = 2 MIN, 2 SEC    NASTRAN SOLN CPU TIME = 2 MIN 6 SEC (R.F. 7)  
+ 2 MIN 8 SEC (R.F. 3)

Fig. B-13 Circular Cylindrical Shell Frequency Spectra

**Appendix B4**  
**MODAL PRESSURE GAIN**

#### B4 MODAL PRESSURE GAIN

Due to the large number of 1/8-scale ET hydroelastic modes in the POGO sensitive frequency range (2-40 Hz full scale, 16-320 Hz 1/8-scale), a preliminary assessment of relative POGO sensitivity is required for selection of significant modes. The quantity of major interest in tank structure, propulsion system coupling is the tank/feedline interface pressure. One expects intuitively that non-axisymmetric modes ( $n \geq 1$ ) are less significant than axisymmetric modes ( $n = 0$ ). The pressure fluctuation is mathematically zero at the dome apex for ( $n > 0$ ). This type of intuitive assessment is incomplete because it does not assign relative significance to the many predominantly axisymmetric modes, and the many asymmetries in the ET results in modes composed of multiple harmonics.

A convenient numerical indication of relative ET POGO sensitivity is modal dynamic gain. Excitation of the hydroelastic tank may occur as a result of interaction with the orbiter, SRB's, or the feedline structure. Choice of a physical excitation location for a dynamic gain calculation is not clear; however, a preliminary assessment is possible utilizing a unit modal generalized force as the excitation.

Consider now the basic hydroelastic equations of a tank which are

$$(M_{sij} + M_{fij}) \ddot{q}_j + C_{ij} \dot{q}_j + K_{ij} q_j = Q_i$$

and

$$P_k = \Gamma_{kj} \ddot{q}_j$$

with  $M_{sij}$  and  $M_{fij}$  representing the structure and fluid mass matrix elements,  $C_{ij}$  representing the viscous damping matrix elements and  $K_{ij}$  representing the stiffness matrix elements.  $Q_i$  and  $q_j$  are the generalized external force and displacement, respectively, and  $P_k$  is a particular pressure related to generalized acceleration by way of the pressure recovery matrix  $\Gamma_{kj}$ .

By application of modal substitution

$$q_j = \Phi_{jn} \xi_n, \quad \Xi_n = \Phi_{ni} Q_i$$

with  $\xi_u$  representing the nth modal generalized displacement and  $\Xi_n$  representing the nth modal generalized force the modal dynamic equations (assuming proportional damping are

$$\mu_n \ddot{\xi}_n + 2\zeta_n \omega_n \mu_n \dot{\xi}_n + \omega_n^2 \mu_n \xi_n = \Xi_n$$

The quantity  $\mu_n$  is the nth modal generalized mass and  $\zeta_n$  is the nth modal critical damping ratio.

The displacement and pressure responses at the Nth natural frequency in the Nth mode are

$$\xi_n = - \frac{\Xi_n}{2\zeta_n \omega_n^2 \mu_n} i$$

and

$$P_k = - \frac{1}{2\zeta_n} \left( \frac{P_{kj} \Phi_{jn}}{\mu_n} \right) \Xi_n i$$

respectively. The pressure gain due to a unit modal excitation force is therefore

$$G_n = \left| \frac{2\zeta_n P_k}{\Xi_n} \right| = \left| \frac{\Gamma_{kj} \Phi_{jn}}{\mu_n} \right|$$

**Appendix C1**  
**COMPLETE EXTERNAL TANK – READ FOR**  
**CEAD – INTERNAL FLUID POINTS OMITTED**



OCTOBER 11, 1973 NASTRAN 2/ 1/73

N A S T R A N    E X E C U T I V E    C O N T R O L    D E C K    E C H O

```

ID HYDRO TANKSR2
RESTART HYDRO ,TANKSR1 , 8/10/73, 258799,
  1.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 6
  2.  REENTER AT DMAP SEQUENCE NUMBER 7
  3.  GPL       ,  FLAGS # 0,  REEL # 1,  FILE # 7
  4.  EQEXIN    ,  FLAGS # 0,  REEL # 1,  FILE # 8
  5.  GPDY      ,  FLAGS # 0,  REEL # 1,  FILE # 9
  6.  CSTM      ,  FLAGS # 0,  REEL # 1,  FILE # 10
  7.  BGPDT     ,  FLAGS # 0,  REEL # 1,  FILE # 11
  8.  SIL       ,  FLAGS # 0,  REEL # 1,  FILE # 12
  9.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 13
 10.  USEY      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 11.  GM        ,  FLAGS # 0,  REEL # 0,  FILE # 0
 12.  GO        ,  FLAGS # 0,  REEL # 0,  FILE # 0
 13.  KAA       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 14.  BAA       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 15.  MAA       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 16.  K4AA      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 17.  EST       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 18.  REENTER AT DMAP SEQUENCE NUMBER 10
 19.  ECPT      ,  FLAGS # 0,  REEL # 1,  FILE # 14
 20.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 15
 21.  REENTER AT DMAP SEQUENCE NUMBER 21
 22.  PLTPAR    ,  FLAGS # 0,  REEL # 1,  FILE # 16
 23.  GPSETS    ,  FLAGS # 0,  REEL # 1,  FILE # 17
 24.  ELSETS    ,  FLAGS # 0,  REEL # 1,  FILE # 18
 25.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 19
 26.  REENTER AT DMAP SEQUENCE NUMBER 23
 27.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 20
 28.  GPTT      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 29.  REENTER AT DMAP SEQUENCE NUMBER 27
 30.  EST       ,  FLAGS # 0,  REEL # 1,  FILE # 21
 31.  ECPT      ,  FLAGS # 0,  REEL # 1,  FILE # 22
 32.  GPC1      ,  FLAGS # 0,  REEL # 1,  FILE # 23
 33.  XVPS      ,  FLAGS # 0,  REEL # 1,  FILE # 24
 34.  GEI       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 35.  K4GG      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 36.  GPST      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 37.  MGG       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 38.  BGG       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 39.  KGGX      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 40.  OGPST     ,  FLAGS # 0,  REEL # 0,  FILE # 0
 41.  K4NN      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 42.  K4FF      ,  FLAGS # 0,  REEL # 0,  FILE # 0
 43.  MNN       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 44.  MFF       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 45.  BNN       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 46.  BFF       ,  FLAGS # 0,  REEL # 0,  FILE # 0
 47.  REENTER AT DMAP SEQUENCE NUMBER 32

```

OCTOBER 11, 1973 NASTRAN 2/ 1/73

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

48.	KGGX	.	FLAGS # 0.	REEL #	1.	FILE #	25
49.	GPST	.	FLAGS # 0.	REEL #	1.	FILE #	26
50.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	27
51.	REENTER	AT	DMAP SEQUENCE NUMBER	36			
52.	MGC	.	FLAGS # 0.	REEL #	1.	FILE #	28
53.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	29
54.	REENTER	AT	DMAP SEQUENCE NUMBER	44			
55.	KGGX	.	FLAGS # 4.	REEL #	1.	FILE #	25
56.	KGG	.	FLAGS # 4.	REEL #	1.	FILE #	25
57.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	30
58.	REENTER	AT	DMAP SEQUENCE NUMBER	54			
59.	RG	.	FLAGS # 0.	REEL #	1.	FILE #	31
60.	USET	.	FLAGS # 0.	REEL #	1.	FILE #	32
61.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	33
62.	GMD	.	FLAGS # 0.	REEL #	0.	FILE #	0
63.	GDU	.	FLAGS # 0.	REEL #	0.	FILE #	0
64.	KFS	.	FLAGS # 0.	REEL #	0.	FILE #	0
65.	OPC	.	FLAGS # 0.	REEL #	0.	FILE #	0
66.	KNN	.	FLAGS # 0.	REEL #	0.	FILE #	0
67.	REENTER	AT	DMAP SEQUENCE NUMBER	63			
68.	GM	.	FLAGS # 0.	REEL #	1.	FILE #	34
69.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	35
70.	REENTER	AT	DMAP SEQUENCE NUMBER	65			
71.	KNN	.	FLAGS # 0.	REEL #	1.	FILE #	36
72.	MNN	.	FLAGS # 0.	REEL #	1.	FILE #	37
73.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	38
74.	REENTER	AT	DMAP SEQUENCE NUMBER	68			
75.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	39
76.	KFF	.	FLAGS # 0.	REEL #	0.	FILE #	0
77.	REENTER	AT	DMAP SEQUENCE NUMBER	71			
78.	KFS	.	FLAGS # 0.	REEL #	1.	FILE #	40
79.	KFF	.	FLAGS # 0.	REEL #	1.	FILE #	41
80.	MFF	.	FLAGS # 0.	REEL #	1.	FILE #	42
81.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	43
82.	REENTER	AT	DMAP SEQUENCE NUMBER	74			
83.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	44
84.	REENTER	AT	DMAP SEQUENCE NUMBER	77			
85.	GO	.	FLAGS # 0.	REEL #	1.	FILE #	45
86.	KAA	.	FLAGS # 0.	REEL #	1.	FILE #	46
87.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	47
88.	REENTER	AT	DMAP SEQUENCE NUMBER	80			
89.	MAA	.	FLAGS # 0.	REEL #	1.	FILE #	48
90.	XVPS	.	FLAGS # 0.	REEL #	1.	FILE #	49
91.	REENTER	AT	DMAP SEQUENCE NUMBER	93			
92.	USETD	.	FLAGS # 0.	REEL #	1.	FILE #	50
93.	EED	.	FLAGS # 0.	REEL #	1.	FILE #	51
94.	EODYN	.	FLAGS # 0.	REEL #	1.	FILE #	52
95.	GO	.	FLAGS # 4.	REEL #	1.	FILE #	45
96.	GDU	.	FLAGS # 4.	REEL #	1.	FILE #	45
97.	GM	.	FLAGS # 4.	REEL #	1.	FILE #	34

OCTOBER 11, 1973 NASTRAN 2/ 1/73

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

98.	GMD	.	FLAGS # 4.	REEL # 1.	FILE # 34
99.	SILD	.	FLAGS # 0.	REEL # 1.	FILE # 53
100.	GPLD	.	FLAGS # 0.	REEL # 1.	FILE # 54
101.	XVPS	.	FLAGS # 0.	REEL # 1.	FILE # 55
102.	TFPUL	.	FLAGS # 0.	REEL # 0.	FILE # 0
103.	REENTER AT DMAP SEQUENCE NUMBER 104				
104.	ABFL	.	FLAGS # 0.	REEL # 1.	FILE # 56
105.	KHFL	.	FLAGS # 0.	REEL # 1.	FILE # 57
106.	XVPS	.	FLAGS # 0.	REEL # 1.	FILE # 58
107.	REENTER AT DMAP SEQUENCE NUMBER 110				
108.	CASEXX	.	FLAGS # 0.	REEL # 1.	FILE # 59
109.	XVPS	.	FLAGS # 0.	REEL # 1.	FILE # 60
110.	REENTER AT DMAP SEQUENCE NUMBER 132				
111.	K2PP	.	FLAGS # 0.	REEL # 1.	FILE # 61
112.	M2PP	.	FLAGS # 0.	REEL # 1.	FILE # 62
113.	XVPS	.	FLAGS # 0.	REEL # 1.	FILE # 63
114.	R2PP	.	FLAGS # 0.	REEL # 0.	FILE # 0
115.	K2DD	.	FLAGS # 0.	REEL # 0.	FILE # 0
116.	M2DD	.	FLAGS # 0.	REEL # 0.	FILE # 0
117.	R2DD	.	FLAGS # 0.	REEL # 0.	FILE # 0
118.	BDD	.	FLAGS # 0.	REEL # 0.	FILE # 0
119.	MDD	.	FLAGS # 0.	REEL # 0.	FILE # 0
120.	REENTER AT DMAP SEQUENCE NUMBER 137				
121.	KDD	.	FLAGS # 0.	REEL # 1.	FILE # 64
122.	MDD	.	FLAGS # 0.	REEL # 1.	FILE # 65
123.	XVPS	.	FLAGS # 0.	REEL # 1.	FILE # 66

\$ END OF CHECKPOINT DICTIONARY

APP DISP

SOL 7.0

CHKPNT YES

TIME 38

DIAG 1,7,8,11,12,13,14,15,16,19,21,22

ALTER 17,17

SAVE JUMPPLOT,PLTF LG,PFILE

ALTER 138,138

READ KDD,MDD,...EED,,CASEXX/CLAMA,PHID,MI,(KEIGS/C,N,MODES/V,N,EIGVS \$

ALTER 153,153

SDR1 USETD,,PHID,,GMD,GMD,,KFS,,/CPHIP,,QPC/C,N,1/C,N,REIG \$

ALTER 156,156

PARAM //C,N,SUB/V,N,SCALAR/V,N,NSIL/V,N,LUSET

EQUIV SIL,SIP/SCALAR/BGPD,RGPD/SCALAR

CUND L156A,SCALAR

PLTTRAN BGPD,SIL/BGPD,SIP/V,N,LUSET/V,N,LUSEP \$

SAVE LUSEP

LABEL L156A

CHKPNT BGPD,SIP

SDR2 CASEXX,CSTM,MPI,DIT,EQDYN,SILD,...,CLAMA,QPC,CPHIP,EST,/,00PC1,

QCFHIP,QESCI,QLFC1,PPHIC/C,N,KEIG

ALTER 158

CUND LBL16,JUMPPLOT

OCTOBER 11, 1973 NASTRAN 2/ 1/73

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

PLOT   PLTPAR,GPSETS,ELSETS,CASEXX,BGPD,EGEXIN,SIP,,PPHIG/PLOTX2/V,N,  
NSIL/V,N,LUSE 1/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE \$  
SAVE   PFILE  
PRMSG\_ PLOTX2// \$  
ENDALTER  
CEND

OCTOBER 11, 1973 NASTRAN 2/ 1/73

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

---

ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM

RESTART   HYDRO   .TANKSR2 .10/11/73.   17026,

---

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS  
 FREE-FREE MODES %0-HARMONIC

CASE CONTROL DECK ECHO

CARD  
 COUNT

1 TITLE # HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 2 SUBTITLE # 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS  
 3 AXISYM#FLUID  
 4 SPC # 101  
 5 MPC # 701  
 6 MAXLINES # 60000  
 7 METHOD # 3  
 8 ECHO # BOTH  
 9 OUTPUT  
 10 DISP#ALL  
 11 HARMONICS#ALL  
 12 SPCFORCES # ALL  
 13 LABEL # FREE-FREE MODES %0-HARMONIC  
 14 SUBCASE 1  
 15 MODES # 10  
 16 OUTPUT#PLOT  
 17 SET 2 # TRIA2, QUAD2, INCLUDE ELEMENTS 8628, 8627, 8530, 8531, 8533, 8534  
 18 PLOTTER CALCOMP 765, 105  
 19 AXES #MY, X, Z  
 20 VIEW # 0.0, 0.0, 0.0  
 21 MAXIMUM DEFORMATION 20.0  
 22 FIND SCALE, ORIGIN 2, SET 2  
 23 PLOT STATIC DEFORMATION 1 THRU 10, SET 2, ORIGIN 2, SHAPE, VECTOR XYZ  
 24 VIEW # 30.0, 45.0, 0.0  
 25 FIND SCALE, ORIGIN 3, SET 2  
 26 PLOT STATIC DEFORMATION 1 THRU 10, SET 2, ORIGIN 3, SHAPE, VECTOR XYZ  
 27 BEGIN BULK

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

INPUT BULK DATA DECK ECHO										
	1	2	3	4	5	6	7	8	9	10
/	1118									
/	1140									
/	1141									
/	1149									
/	1161									
/	1164									
/	1186									
OMIT1	0	1005009	1005010	1005011	1005022	1005023	1005024			
OMIT1	0	1005035	1005036	1005037	1005048	1005049	1005050			
OMIT1	0	1005061	1005062	1005063	1005074	1005075	1005076			
OMIT1	0	1005087	1005088	1005089	1005100	1005101	1005102			
OMIT1	0	1005113	1005114	1005115	1005126	1005127	1005128			
OMIT1	0	1005139	1005140	1005141	1005152	1005153	1005165			
OMIT1	0	1008179	1008180	1008199	1008200	1008219	1008220			
OMIT1	0	1008239	1008240	1008259	1008260	1008279	1008280			
OMIT1	0	1008300	1008301	1008319	1008320	1008342	1008343			
OMIT1	0	1008379	1008380	1008399	1008400	1008419				
OMIT1	1	8335								
OMIT1	2	5121	5147	5160	5173	5186	5199	8075	COM21	
COM21	8374	8414	8434							
OMIT1	2	5145	5149							
OMIT1	3	5013	5021	5039	5047	5065	5073	5091	COM31	
COM31	5099	8170	8178	8210	8218	8230	8238	8250	COM32	
COM32	8258	8270	8278	8298	8330	8340				
OMIT1	12	5158	5162	5171	5175	5184	5188			
OMIT1	12	5197	5201							
OMIT1	12	8331	8334							
OMIT1	12	8412	8416	8432	8436					
OMIT1	13	8130	8139	8350	8352	8358				
OMIT1	23	5067	5071	5093	5097	5119	5123			
OMIT1	23	5017	5043	5069	5095	8174	8214	8234	COM231	
COM231	8254	8274	8294	8336						
OMIT1	23	8212	8216	8232	8236	8252				
OMIT1	23	8256	8272	8276	8292	8296	8333	8338		
OMIT1	35	5078	5086							
OMIT1	123	5015	5019	5041	5045	8072	8077	8132		
OMIT1	123	8135	8137	8172	8176					
OMIT1	123	8354	8356	8372	8376	8392	8396			
OMIT1	135	5104	5112	5130	5138					
OMIT1	12456	5183	5185	5187	5189					
OMIT1	23456	5080	5082	5084						
OMIT1	23456	5092	5094	5096	5098					
OMIT1	123456	5079	5081	5083	5085					
EIGR	3	UINV	30.	60.	3	6		1.	-3	LEIG3
LEIG3	MAX									
PBAR	8531	8400	.324	.0126	.3680		.0000779			
ENDDATA										
TOTAL COUNT#	47									

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED. XSORT WILL RE-ORDER DECK.

OCTOBER 11, 1973 NASTRAM 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 10-HARMONICS

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
1- AXIF	5100	-386.	4.39-5	3.065	NO					EAX
2- EAX	0									
3- BODYLIST		AXIS	5178	5179	5166	5154	5142	5129	5129	EBDY1
4- EBDY1	5116	5103	5090	5077	5064	5051	5038	5025	5025	EBDY2
5- EBDY2	5012									
6- BODYLIST	6.54-6	AXIS	8439	8420	8401	8381	8344	8321	8321	ELMBD1
7- ELMBD1	8302	8281	8261	8241	8221	8201	8181			
8- CHAR	5517	5517	5117	5118	.0	.0	1.0	1		
9- CHAR	5518	5517	5118	5119	.0	.0	1.0	1		
10- CHAR	5519	5517	5119	5120	.0	.0	1.0	1		
11- CHAR	5520	5517	5120	5121	.0	.0	1.0	1		
12- CHAR	5521	5517	5121	5122	.0	.0	1.0	1		
13- CHAR	5522	5517	5122	5123	.0	.0	1.0	1		
14- CHAR	5523	5517	5123	5124	.0	.0	1.0	1		
15- CHAR	5524	5517	5124	5125	.0	.0	1.0	1		
16- CHAR	8440	8440	8070	8071	.0	.0	1.0	1		EB440
17- EB440			-.393	0.0	0.0	-.393	0.0	0.0		
18- CHAR	8441	8440	8071	8072	.0	.0	1.0	1		EB441
19- EB441			-.393	0.0	0.0	-.393	0.0	0.0		
20- CHAR	8442	8440	8072	8073	.0	.0	1.0	1		EB442
21- EB442			-.393	0.0	0.0	-.393	0.0	0.0		
22- CHAR	8443	8440	8073	8074	.0	.0	1.0	1		EB443
23- EB443			-.393	0.0	0.0	-.393	0.0	0.0		
24- CHAR	8444	8440	8074	8075	.0	.0	1.0	1		EB444
25- EB444			-.393	0.0	0.0	-.393	0.0	0.0		
26- CHAR	8445	8440	8075	8076	.0	.0	1.0	1		EB445
27- EB445			-.393	0.0	0.0	-.393	0.0	0.0		
28- CHAR	8446	8440	8076	8077	.0	.0	1.0	1		EB446
29- EB446			-.393	0.0	0.0	-.393	0.0	0.0		
30- CHAR	8447	8440	8077	8078	.0	.0	1.0	1		EB447
31- EB447			-.393	0.0	0.0	-.393	0.0	0.0		
32- CHAR	8448	8440	8078	8079	.0	.0	1.0	1		EB448
33- EB448			-.393	0.0	0.0	-.393	0.0	0.0		
34- CHAR	8450	8450	8170	8171	.0	.0	1.0	1		EB450
35- EB450			-.185	0.0	0.0	-.185	0.0	0.0		
36- CHAR	8451	8450	8171	8172	.0	.0	1.0	1		EB451
37- EB451			-.185	0.0	0.0	-.185	0.0	0.0		
38- CHAR	8452	8450	8172	8173	.0	.0	1.0	1		EB452
39- EB452			-.185	0.0	0.0	-.185	0.0	0.0		
40- CHAR	8453	8450	8173	8174	.0	.0	1.0	1		EB453
41- EB453			-.185	0.0	0.0	-.185	0.0	0.0		
42- CHAR	8454	8450	8174	8175	.0	.0	1.0	1		EB454
43- EB454			-.185	0.0	0.0	-.185	0.0	0.0		
44- CHAR	8455	8450	8175	8176	.0	.0	1.0	1		EB455
45- EB455			-.185	0.0	0.0	-.185	0.0	0.0		
46- CHAR	8456	8450	8176	8177	.0	.0	1.0	1		EB456
47- EB456			-.185	0.0	0.0	-.185	0.0	0.0		
48- CHAR	8457	8450	8177	8178	.0	.0	1.0	1		EB457
49- EB457			-.185	0.0	0.0	-.185	0.0	0.0		
50- CHAR	8460	8460	8190	8191	.0	.0	1.0	1		EB460



OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE,UMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
51- E8460				-.185	0.0	0.0	-.185	0.0	0.0	
52- CHAR	8461	8460		8191	8192	.0	.0	1.0	1	E8461
53- E8461				-.185	0.0	0.0	-.185	0.0	0.0	
54- CHAR	8462	8460		8192	8193	.0	.0	1.0	1	E8462
55- E8462				-.185	0.0	0.0	-.185	0.0	0.0	
56- CHAR	8463	8460		8193	8194	.0	.0	1.0	1	E8463
57- E8463				-.185	0.0	0.0	-.185	0.0	0.0	
58- CHAR	8464	8460		8194	8195	.0	.0	1.0	1	E8464
59- E8464				-.185	0.0	0.0	-.185	0.0	0.0	
60- CHAR	8465	8460		8195	8196	.0	.0	1.0	1	E8465
61- E8465				-.185	0.0	0.0	-.185	0.0	0.0	
62- CHAR	8466	8460		8196	8197	.0	.0	1.0	1	E8466
63- E8466				-.185	0.0	0.0	-.185	0.0	0.0	
64- CHAR	8467	8460		8197	8198	.0	.0	1.0	1	E8467
65- E8467				-.185	0.0	0.0	-.185	0.0	0.0	
66- CHAR	8470	8470		8210	8211	.0	.0	1.0	1	E8470
67- E8470				-1.401	0.0	0.0	-1.401	0.0	0.0	
68- CHAR	8471	8470		8211	8212	.0	.0	1.0	1	E8471
69- E8471				-1.401	0.0	0.0	-1.401	0.0	0.0	
70- CHAR	8472	8470		8212	8213	.0	.0	1.0	1	E8472
71- E8472				-1.401	0.0	0.0	-1.401	0.0	0.0	
72- CHAR	8473	8470		8213	8214	.0	.0	1.0	1	E8473
73- E8473				-1.401	0.0	0.0	-1.401	0.0	0.0	
74- CHAR	8474	8470		8214	8215	.0	.0	1.0	1	E8474
75- E8474				-1.401	0.0	0.0	-1.401	0.0	0.0	
76- CHAR	8475	8470		8215	8216	.0	.0	1.0	1	E8475
77- E8475				-1.401	0.0	0.0	-1.401	0.0	0.0	
78- CHAR	8476	8470		8216	8217	.0	.0	1.0	1	E8476
79- E8476				-1.401	0.0	0.0	-1.401	0.0	0.0	
80- CHAR	8477	8470		8217	8218	.0	.0	1.0	1	E8477
81- E8477				-1.401	0.0	0.0	-1.401	0.0	0.0	
82- CHAR	8480	8480		8230	8231	.0	.0	1.0	1	E8480
83- E8480				-.1850	0.0	0.0	-.1850	0.0	0.0	
84- CHAR	8481	8480		8231	8232	.0	.0	1.0	1	E8481
85- E8481				-.1850	0.0	0.0	-.1850	0.0	0.0	
86- CHAR	8482	8480		8232	8233	.0	.0	1.0	1	E8482
87- E8482				-.1850	0.0	0.0	-.1850	0.0	0.0	
88- CHAR	8483	8480		8233	8234	.0	.0	1.0	1	E8483
89- E8483				-.1850	0.0	0.0	-.1850	0.0	0.0	
90- CHAR	8484	8480		8234	8235	.0	.0	1.0	1	E8484
91- E8484				-.1850	0.0	0.0	-.1850	0.0	0.0	
92- CHAR	8485	8480		8235	8236	.0	.0	1.0	1	E8485
93- E8485				-.1850	0.0	0.0	-.1850	0.0	0.0	
94- CHAR	8486	8480		8236	8237	.0	.0	1.0	1	E8486
95- E8486				-.1850	0.0	0.0	-.1850	0.0	0.0	
96- CHAR	8487	8480		8237	8238	.0	.0	1.0	1	E8487
97- E8487				-.1850	0.0	0.0	-.1850	0.0	0.0	
98- CHAR	8490	8490		8250	8251	.0	.0	1.0	1	E8490
99- E8490				-.1850	0.0	0.0	-.1850	0.0	0.0	
100- CHAR	8491	8490		8251	8252	.0	.0	1.0	1	E8491

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HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 40-HARMONICS

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
101- E8491				-.1850	0.0	0.0	-.1850	0.0	0.0	
102- CBAR	8492	8490		8252	8253	.0	.0	1.0	1	E8492
103- E8492				-.1850	0.0	0.0	-.1850	0.0	0.0	
104- CBAR	8493	8490		8253	8254	.0	.0	1.0	1	E8493
105- E8493				-.1850	0.0	0.0	-.1850	0.0	0.0	
106- CBAR	8494	8490		8254	8255	.0	.0	1.0	1	E8494
107- E8494				-.1850	0.0	0.0	-.1850	0.0	0.0	
108- CBAR	8495	8490		8255	8256	.0	.0	1.0	1	E8495
109- E8495				-.1850	0.0	0.0	-.1850	0.0	0.0	
110- CBAR	8496	8490		8256	8257	.0	.0	1.0	1	E8496
111- E8496				-.1850	0.0	0.0	-.1850	0.0	0.0	
112- CBAR	8497	8490		8257	8258	.0	.0	1.0	1	E8497
113- E8497				-.1850	0.0	0.0	-.1850	0.0	0.0	
114- CBAR	8500	8500		8270	8271	.0	.0	1.0	1	E8500
115- E8500				-.1850	0.0	0.0	-.1850	0.0	0.0	
116- CBAR	8501	8500		8271	8272	.0	.0	1.0	1	E8501
117- E8501				-.1850	0.0	0.0	-.1850	0.0	0.0	
118- CBAR	8502	8500		8272	8273	.0	.0	1.0	1	E8502
119- E8502				-.1850	0.0	0.0	-.1850	0.0	0.0	
120- CBAR	8503	8500		8273	8274	.0	.0	1.0	1	E8503
121- E8503				-.1850	0.0	0.0	-.1850	0.0	0.0	
122- CBAR	8504	8500		8274	8275	.0	.0	1.0	1	E8504
123- E8504				-.185	0.0	0.0	-.185	0.0	0.0	
124- CBAR	8505	8500		8275	8276	.0	.0	1.0	1	E8505
125- E8505				-.185	0.0	0.0	-.185	0.0	0.0	
126- CBAR	8506	8500		8276	8277	.0	.0	1.0	1	E8506
127- E8506				-.185	0.0	0.0	-.185	0.0	0.0	
128- CBAR	8507	8500		8277	8278	.0	.0	1.0	1	E8507
129- E8507				-.185	0.0	0.0	-.185	0.0	0.0	
130- CBAR	8510	8510		8290	8291	.0	.0	1.0	1	E8510
131- E8510				-1.401	0.0	0.0	-1.401	0.0	0.0	
132- CBAR	8511	8510		8291	8292	.0	.0	1.0	1	E8511
133- E8511				-1.401	0.0	0.0	-1.401	0.0	0.0	
134- CBAR	8512	8510		8292	8293	.0	.0	1.0	1	E8512
135- E8512				-1.401	0.0	0.0	-1.401	0.0	0.0	
136- CBAR	8513	8510		8293	8294	.0	.0	1.0	1	E8513
137- E8513				-1.4010	0.0	0.0	-1.401	0.0	0.0	
138- CBAR	8514	8510		8294	8295	.0	.0	1.0	1	E8514
139- E8514				-1.401	0.0	0.0	-1.4010	0.0	0.0	
140- CBAR	8515	8510		8295	8296	.0	.0	1.0	1	E8515
141- E8515				-1.401	0.0	0.0	-1.401	0.0	0.0	
142- CBAR	8516	8510		8296	8297	.0	.0	1.0	1	E8516
143- E8516				-1.401	0.0	0.0	-1.401	0.0	0.0	
144- CBAR	8517	8510		8297	8298	.0	.0	1.0	1	E8517
145- E8517				-1.401	0.0	0.0	-1.401	0.0	0.0	
146- CBAR	8520	8520		8310	8311	.0	.0	1.0	1	E8520
147- E8520				-.1850	0.0	0.0	-.1850	0.0	0.0	
148- CBAR	8521	8520		8311	8312	.0	.0	1.0	1	E8521
149- E8521				-.1850	0.0	0.0	-.1850	0.0	0.0	
150- CBAR	8522	8520		8312	8313	.0	.0	1.0	1	E8522

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180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 10-HARMONICS

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
151- 68522				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
152- CBAR	8523	8520	8313	8314	.0	.0	1.0	1	68523	
153- 68523				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
154- CHAR	8524	8520	8314	8315	.0	.0	1.0	1	68524	
155- 68524				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
156- CBAR	8525	8520	8315	8316	.0	.0	1.0	1	68525	
157- 68525				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
158- CHAR	8526	8520	8316	8317	.0	.0	1.0	1	68526	
159- 68526				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
160- CHAR	8527	8520	8317	8318	.0	.0	1.0	1	68527	
161- 68527				-1.1850	0.0	0.0	-1.1850	0.0	0.0	
162- CHAR	8530	8531	8330	8331	.0	.0	1.0	1	68530	
163- 68530				-1.401	0.0	0.0	-1.401	0.0	0.0	
164- CHAR	8531	8531	8331	8332	.0	.0	1.0	1	68531	
165- 68531				-1.401	0.0	0.0	-1.401	0.0	0.0	
166- CHAR	8532	8530	8332	8333	.0	.0	1.0	1	68532	
167- 68532				-1.401	0.0	0.0	-1.401	0.0	0.0	
168- CHAR	8533	8531	8333	8334	.0	.0	1.0	1	68533	
169- 68533				-1.401	0.0	0.0	-1.401	0.0	0.0	
170- CHAR	8534	8531	8334	8335	.0	.0	1.0	1	68534	
171- 68534				-1.401	0.0	0.0	-1.401	0.0	0.0	
172- CHAR	8535	8530	8335	8336	.0	.0	1.0	1	68535	
173- 68535				-1.4010	0.0	0.0	-1.401	0.0	0.0	
174- CHAR	8536	8530	8336	8337	.0	.0	1.0	1	68536	
175- 68536				-1.401	0.0	0.0	-1.4010	0.0	0.0	
176- CBAR	8537	8530	8337	8338	.0	.0	1.0	1	68537	
177- 68537				-1.401	0.0	0.0	-1.401	0.0	0.0	
178- CHAR	8538	8530	8338	8339	.0	.0	1.0	1	68538	
179- 68538				-1.401	0.0	0.0	-1.401	0.0	0.0	
180- CBAR	8539	8530	8339	8340	.0	.0	1.0	1	68539	
181- 68539				-1.401	0.0	0.0	-1.401	0.0	0.0	
182- CHAR	8540	8540	8370	8371	.0	.0	1.0	1	68540	
183- 68540				-1.393	0.0	0.0	-1.393	0.0	0.0	
184- CHAR	8541	8540	8371	8372	.0	.0	1.0	1	68541	
185- 68541				-1.393	0.0	0.0	-1.393	0.0	0.0	
186- CBAR	8542	8540	8372	8373	.0	.0	1.0	1	68542	
187- 68542				-1.393	0.0	0.0	-1.393	0.0	0.0	
188- CHAR	8543	8540	8373	8374	.0	.0	1.0	1	68543	
189- 68543				-1.393	0.0	0.0	-1.393	0.0	0.0	
190- CHAR	8544	8540	8374	8375	.0	.0	1.0	1	68544	
191- 68544				-1.393	0.0	0.0	-1.393	0.0	0.0	
192- CBAR	8545	8540	8375	8376	.0	.0	1.0	1	68545	
193- 68545				-1.393	0.0	0.0	-1.393	0.0	0.0	
194- CHAR	8546	8540	8376	8377	.0	.0	1.0	1	68546	
195- 68546				-1.393	0.0	0.0	-1.393	0.0	0.0	
196- CHAR	8547	8540	8377	8378	.0	.0	1.0	1	68547	
197- 68547				-1.393	0.0	0.0	-1.393	0.0	0.0	
198- CHAR	8550	8550	8350	8351	.0	.0	1.0	1	68550	
199- 68550				-1.401	0.0	0.0	-1.401	0.0	0.0	
200- CHAR	8551	8550	8351	8352	.0	.0	1.0	1	68551	

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180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
201- E8551					-1.4010	0.0	0.0	0.0	1.2194	-0.6899	
202- CHAR	8552		8550		8352	8353	1.0	.0	.0	1	E8552
203- E8552					0.0	1.2194	-0.6899	-1.4010	0.0	0.0	
204- CHAR	8553		8550		8353	8354	.0	.0	1.0	1	E8553
205- E8553					-1.401	0.0	0.0	-1.401	0.0	0.0	
206- CHAR	8554		8550		8354	8355	.0	.0	1.0	1	E8554
207- E8554					-1.4010	0.0	0.0	0.0	1.2194	0.6899	
208- CHAR	8555		8550		8355	8356	1.0	.0	.0	1	E8555
209- E8555					0.0	1.2194	0.6899	-1.4010	0.0	0.0	
210- CHAR	8556		8550		8356	8357	.0	.0	1.0	1	E8556
211- E8556					-1.401	0.0	0.0	-1.401	0.0	0.0	
212- CHAR	8557		8550		8357	8358	.0	.0	1.0	1	E8557
213- E8557					-1.401	0.0	0.0	-1.401	0.0	0.0	
214- CHAR	8700		8400		5117	5118	.0	.0	1.0	1	E8400
215- E8400					-.393	0.0	0.0	-.393	0.0	0.0	
216- CHAR	8701		8400		5118	5119	.0	.0	1.0	1	E8401
217- E8401					-.393	0.0	0.0	-.393	0.0	0.0	
218- CHAR	8702		8400		5119	5120	.0	.0	1.0	1	E8402
219- E8402					-.393	0.0	0.0	-.393	0.0	0.0	
220- CHAR	8703		8400		5120	5126	.0	.0	1.0	1	E8403
221- E8403					-.393	0.0	0.0	-.393	0.0	0.0	
222- CHAR	8704		8400		5126	5121	.0	.0	1.0	1	E8404
223- E8404					-.393	0.0	0.0	-.393	0.0	0.0	
224- CHAR	8705		8400		5121	5122	.0	.0	1.0	1	E8405
225- E8405					-.393	0.0	0.0	-.393	0.0	0.0	
226- CHAR	8706		8400		5122	5123	.0	.0	1.0	1	E8406
227- E8406					-.393	0.0	0.0	-.393	0.0	0.0	
228- CHAR	8707		8400		5123	5124	.0	.0	1.0	1	E8407
229- E8407					-.393	0.0	0.0	-.393	0.0	0.0	
230- CHAR	8708		8400		5124	5125	.0	.0	1.0	1	E8408
231- E8408					-.393	0.0	0.0	-.393	0.0	0.0	
232- CHAR	8710		8410		8110	8111	.0	.0	1.0	1	E8410
233- E8410					-.185	0.0	0.0	-.185	0.0	0.0	
234- CHAR	8711		8410		8111	8112	.0	.0	1.0	1	E8411
235- E8411					-.185	0.0	0.0	-.185	0.0	0.0	
236- CHAR	8712		8410		8112	8113	.0	.0	1.0	1	E8412
237- E8412					-.185	0.0	0.0	-.185	0.0	0.0	
238- CHAR	8713		8410		8113	8114	.0	.0	1.0	1	E8413
239- E8413					-.185	0.0	0.0	-.185	0.0	0.0	
240- CHAR	8714		8410		8114	8115	.0	.0	1.0	1	E8414
241- E8414					-.185	0.0	0.0	-.185	0.0	0.0	
242- CHAR	8715		8410		8115	8116	.0	.0	1.0	1	E8415
243- E8415					-.185	0.0	0.0	-.185	0.0	0.0	
244- CHAR	8716		8410		8116	8117	.0	.0	1.0	1	E8416
245- E8416					-.185	0.0	0.0	-.185	0.0	0.0	
246- CHAR	8717		8410		8117	8118	.0	.0	1.0	1	E8417
247- E8417					-.185	0.0	0.0	-.185	0.0	0.0	
248- CHAR	8718		8410		8118	8119	.0	.0	1.0	1	E8418
249- E8418					-.185	0.0	0.0	-.185	0.0	0.0	
250- CHAR	8720		8420		8130	8131	.0	.0	1.0	1	E8420

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180 DEGREE SYMMETRY SYMM CASE,OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
251- E8420				-1.401	0.0	0.0	-1.401	0.0	0.0	
252- CBAR	8721	8420	8131	8132	.0	.0	1.0	1	E8421	
253- E8421			-1.401	0.0	0.0	-1.401	0.0	0.0		
254- CBAR	8722	8420	8132	8133	.0	.0	1.0	1	E8422	
255- E8422			-1.401	0.0	0.0	-1.401	0.0	0.0		
256- CBAR	8723	8420	8133	8134	.0	.0	1.0	1	E8423	
257- E8423			-1.401	0.0	0.0	1.401	0.0	0.0		
258- CBAR	8724	8420	8134	8135	.0	.0	1.0	1	E8424	
259- E8424			1.401	0.0	0.0	-1.401	0.0	0.0		
260- CBAR	8725	8420	8135	8136	.0	.0	1.0	1	E8425	
261- E8425			-1.401	0.0	0.0	-1.401	0.0	0.0		
262- CBAR	8726	8420	8136	8137	.0	.0	1.0	1	E8426	
263- E8426			-1.401	0.0	0.0	-1.401	0.0	0.0		
264- CBAR	8727	8420	8137	8138	.0	.0	1.0	1	E8427	
265- E8427			-1.401	0.0	0.0	-1.401	0.0	0.0		
266- CBAR	8728	8420	8138	8139	.0	.0	1.0	1	E8428	
267- E8428			-1.401	0.0	0.0	-1.401	0.0	0.0		
268- CBAR	8730	8430	8150	8151	.0	.0	1.0	1	E8430	
269- E8430			-1.401	0.0	0.0	-1.401	0.0	0.0		
270- CBAR	8731	8430	8151	8152	.0	.0	1.0	1	E8431	
271- E8431			-1.401	0.0	0.0	-1.401	0.0	0.0		
272- CBAR	8732	8430	8152	8153	.0	.0	1.0	1	E8432	
273- E8432			-1.401	0.0	0.0	-1.401	0.0	0.0		
274- CBAR	8733	8430	8153	8154	.0	.0	1.0	1	E8433	
275- E8433			-1.401	0.0	0.0	-1.401	0.0	0.0		
276- CBAR	8734	8430	8154	8155	.0	.0	1.0	1	E8434	
277- E8434			-1.401	0.0	0.0	-1.401	0.0	0.0		
278- CBAR	8735	8430	8155	8156	.0	.0	1.0	1	E8435	
279- E8435			-1.401	0.0	0.0	-1.401	0.0	0.0		
280- CBAR	8736	8430	8156	8157	.0	.0	1.0	1	E8436	
281- E8436			-1.401	0.0	0.0	-1.401	0.0	0.0		
282- CBAR	8737	8430	8157	8158	.0	.0	1.0	1	E8437	
283- E8437			-1.401	0.0	0.0	-1.401	0.0	0.0		
284- CBAR	8738	8430	8158	8159	.0	.0	1.0	1	E8438	
285- E8438			-1.401	0.0	0.0	-1.401	0.0	0.0		
286- CFLUID2	5209	5009	5022							
287- CFLUID2	5222	5022	5035							
288- CFLUID2	5235	5035	5048							
289- CFLUID2	5248	5048	5061							
290- CFLUID2	5261	5061	5074							
291- CFLUID2	5274	5074	5087							
292- CFLUID2	5287	5087	5100							
293- CFLUID2	5300	5100	5113							
294- CFLUID2	5313	5113	5126							
295- CFLUID2	5326	5126	5139							
296- CFLUID2	5339	5139	5152							
297- CFLUID2	5352	5152	5165							
298- CFLUID2	5367	5165	5178							
299- CFLUID2	8801	8179	8199			6.54-6	5000.			
300- CFLUID2	8811	8199	8219			6.54-6	5000.			

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC0

S O R T E D B U L K D A T A E C H O																				
CARD	COUNT	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10
301-	CFLUID2	8821		8219		8239								6.54-6		5000.				
302-	CFLUID2	8831		8239		8259								6.54-6		5000.				
303-	CFLUID2	8841		8259		8279								6.54-6		5000.				
304-	CFLUID2	8851		8279		8300								6.54-6		5000.				
305-	CFLUID2	8861		8300		8319								6.54-6		5000.				
306-	CFLUID2	8871		8319		8342								6.54-6		5000.				
307-	CFLUID2	8881		8342		8379								6.54-6		5000.				
308-	CFLUID2	8891		8379		8399								6.54-6		5000.				
309-	CFLUID2	8901		8399		8419								6.54-6		5000.				
310-	CFLUID2	8911		8419		8439								6.54-6		5000.				
311-	CFLUID3	5342		5142		5141		5154												
312-	CFLUID3	5354		5154		5153		5166												
313-	CFLUID3	5365		5165		5178		5179												
314-	CFLUID3	5366		5166		5165		5179												
315-	CFLUID3	8903		8401		8400		8420						6.54-6		5000.				
316-	CFLUID3	8912		8420		8419		8439						6.54-6		5000.				
317-	CFLUID4	5210		5010		5009		5022		5023										
318-	CFLUID4	5211		5011		5010		5023		5024										
319-	CFLUID4	5212		5012		5011		5024		5025										
320-	CFLUID4	5223		5023		5022		5035		5036										
321-	CFLUID4	5224		5024		5023		5036		5037										
322-	CFLUID4	5225		5025		5024		5037		5038										
323-	CFLUID4	5236		5036		5035		5048		5049										
324-	CFLUID4	5237		5037		5036		5049		5050										
325-	CFLUID4	5238		5038		5037		5050		5051										
326-	CFLUID4	5249		5049		5048		5061		5062										
327-	CFLUID4	5250		5050		5049		5062		5063										
328-	CFLUID4	5251		5051		5050		5063		5064										
329-	CFLUID4	5262		5064		5063		5076		5077										
330-	CFLUID4	5263		5063		5062		5075		5076										
331-	CFLUID4	5264		5062		5061		5074		5075										
332-	CFLUID4	5275		5087		5088		5101		5100										
333-	CFLUID4	5276		5088		5089		5102		5101										
334-	CFLUID4	5277		5089		5090		5103		5102										
335-	CFLUID4	5288		5103		5102		5115		5116										
336-	CFLUID4	5289		5102		5101		5114		5115										
337-	CFLUID4	5290		5101		5100		5113		5114										
338-	CFLUID4	5301		5113		5114		5127		5126										
339-	CFLUID4	5302		5114		5115		5128		5127										
340-	CFLUID4	5303		5115		5116		5129		5128										
341-	CFLUID4	5314		5129		5128		5141		5142										
342-	CFLUID4	5315		5128		5127		5140		5141										
343-	CFLUID4	5316		5127		5126		5139		5140										
344-	CFLUID4	5327		5075		5074		5087		5088										
345-	CFLUID4	5328		5076		5075		5088		5089										
346-	CFLUID4	5329		5077		5076		5090		5089										
347-	CFLUID4	5340		5140		5139		5152		5153										
348-	CFLUID4	5341		5141		5140		5153		5154										
349-	CFLUID4	5353		5153		5152		5165		5166										
350-	CFLUID4	8802		8179		8180		8200		8199				6.54-6		5000.				

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

S O R T E D B U L K D A T A E C H O											
CARD	COUNT	1	2	3	4	5	6	7	8	9	10
351- CFLUID4	8803	8180	8181	8201	8200	6.54-6	5000.				
352- CFLUID4	8812	8199	8200	8220	8219	6.54-6	5000.				
353- CFLUID4	8813	8200	8201	8221	8220	6.54-6	5000.				
354- CFLUID4	8822	8219	8220	8240	8239	6.54-6	5000.				
355- CFLUID4	8823	8220	8221	8241	8240	6.54-6	5000.				
356- CFLUID4	8832	8239	8240	8260	8259	6.54-6	5000.				
357- CFLUID4	8833	8240	8241	8261	8260	6.54-6	5000.				
358- CFLUID4	8842	8259	8260	8280	8279	6.54-6	5000.				
359- CFLUID4	8843	8260	8261	8281	8280	6.54-6	5000.				
360- CFLUID4	8852	8279	8280	8301	8300	6.54-6	5000.				
361- CFLUID4	8853	8280	8281	8302	8301	6.54-6	5000.				
362- CFLUID4	8862	8300	8301	8320	8319	6.54-6	5000.				
363- CFLUID4	8863	8301	8302	8321	8320	6.54-6	5000.				
364- CFLUID4	8872	8319	8320	8343	8342	6.54-6	5000.				
365- CFLUID4	8873	8320	8321	8344	8343	6.54-6	5000.				
366- CFLUID4	8882	8342	8343	8380	8379	6.54-6	5000.				
367- CFLUID4	8883	8343	8344	8381	8380	6.54-6	5000.				
368- CFLUID4	8892	8379	8380	8400	8399	6.54-6	5000.				
369- CFLUID4	8893	8380	8381	8401	8400	6.54-6	5000.				
370- CFLUID4	8902	8399	8400	8420	8419	6.54-6	5000.				
371- CONM2	8750	8210	69	.001053							
372- CONM2	8751	8290	69	.000663							
373- CONM2	8752	8294	69	.000234							
374- CONM2	8753	8331	69	.001027							
375- CONM2	8754	8336	69	.00026							
376- CONM2	8755	8334	69	.000572							
377- CONM2	8756	8134	69	.001508							
378- CONM2	8757	8352	69	.000949							
379- CONM2	8758	8355	69	.000884							
380- CONM2	8759	8328	696	.000880							
381- CONROD	8600	5126	8114	8600	.1125						
382- CONROD	8601	8114	8134	8600	.2475						
383- CONROD	8602	8134	8154	8600	.2475						
384- CONROD	8603	8154	8074	8600	.1125						
385- CONROD	8604	8075	8174	8600	.0640						
386- CONROD	8605	8174	8194	8600	.0384						
387- CONROD	8607	8073	8173	8600	.0800						
388- CONROD	8608	8173	8193	8600	.0768						
389- CONROD	8609	8193	8213	8600	.0458						
390- CONROD	8610	8213	8233	8600	.0458						
391- CONROD	8611	8233	8253	8600	.0458						
392- CONROD	8612	8253	8273	8600	.0458						
393- CONROD	8613	8273	8293	8600	.0458						
394- CONROD	8614	8293	8313	8600	.0458						
395- CONROD	8615	8313	8335	8600	.0458						
396- CONROD	8616	8335	8373	8600	.0458						
397- CONROD	8620	8134	8140	8600	.0870						
398- CONROD	8621	8290	8294	8600	.2630						
399- CONROD	8622	8294	8299	8600	.2630						
400- CONROD	8623	8330	8336	8600	.2630						

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

SORTED BULK DATA ECHO

CARD	COUN1	1	2	3	4	5	6	7	8	9	10
401-	CONROD	8624	8336	8341	8600	.2630					
402-	CONROD	8625	8352	8359	8600	.2630					
403-	CONROD	8626	8355	8360	8600	.2630					
404-	CONROD	8627	8328	8331	8600	.378					
405-	CONROD	8628	8328	8290	8600	.933					
406-	CONROD	8629	8329	8334	8500	.263					
407-	CORD2C	69	0	-81.5683.0		35.5985	66.9096	.0		26.5170	669
408-	669	68.25	0.0	48.432							
409-	CORD2C	100	696	74.738	-30.494	6.138	200.0	-30.494	6.138	ECSSRM	
410-	ECSSRM	74.738	0.0	0.0							
411-	CORD2C	5001	0	-81.5683.0		35.5985	66.9096	.0		26.5170	6CD
412-	6CD	68.25	0.0	48.432							
413-	CORD2C	5100	0	-81.5683.0		35.5985	66.9096	.0		26.5170	6C5100
414-	6C5100	68.25	0.0	48.432							
415-	CORD2R	101	696	74.738	-30.494	6.138	74.738	-28.570115.6963	ERSSRM		
416-	ERSSRM	200.	-30.494	6.138							
417-	CORD2R	696	0	-81.5683.0		35.5985	-80.2278.0			57.5136	6696
418-	6696	68.25	0.0	48.432							
419-	CORD2R	3001	0	-81.5683.0		35.5985	-80.2278.0			57.5136	6C3001
420-	6C3001	68.25	0.0	48.432							
421-	CORD2R	3002	696	245.7536-16.463111.0003		245.7536-13.75	24.9514	6C3002			
422-	6C3002	300.	-16.4631	11.0003							
423-	CQUAD2	5009	5009	5013	5014	5027	5026				
424-	CQUAD2	5010	5009	5014	5015	5028	5027				
425-	CQUAD2	5011	5009	5015	5016	5029	5028				
426-	CQUAD2	5012	5009	5016	5017	5030	5029				
427-	CQUAD2	5013	5009	5017	5018	5031	5030				
428-	CQUAD2	5014	5009	5018	5019	5032	5031				
429-	CQUAD2	5015	5009	5019	5020	5033	5032				
430-	CQUAD2	5016	5009	5020	5021	5034	5033				
431-	CQUAD2	5017	5009	5026	5027	5040	5039				
432-	CQUAD2	5018	5009	5027	5028	5041	5040				
433-	CQUAD2	5019	5009	5028	5029	5042	5041				
434-	CQUAD2	5020	5009	5029	5030	5043	5042				
435-	CQUAD2	5021	5009	5030	5031	5044	5043				
436-	CQUAD2	5022	5009	5031	5032	5045	5044				
437-	CQUAD2	5023	5009	5032	5033	5046	5045				
438-	CQUAD2	5024	5009	5033	5034	5047	5046				
439-	CQUAD2	5025	5009	5039	5040	5053	5052				
440-	CQUAD2	5026	5009	5040	5041	5054	5053				
441-	CQUAD2	5027	5009	5041	5042	5055	5054				
442-	CQUAD2	5028	5009	5042	5043	5056	5055				
443-	CQUAD2	5029	5009	5043	5044	5057	5056				
444-	CQUAD2	5030	5009	5044	5045	5058	5057				
445-	CQUAD2	5031	5009	5045	5046	5059	5058				
446-	CQUAD2	5032	5009	5046	5047	5060	5059				
447-	CQUAD2	5033	5009	5052	5053	5066	5065				
448-	CQUAD2	5034	5009	5053	5054	5067	5066				
449-	CQUAD2	5035	5009	5054	5055	5068	5067				
450-	CQUAD2	5036	5009	5055	5056	5069	5068				



OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

S O R T E D B U L K D A T A F C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
451- CQUAD2	5037	5009	5056	5057	5070	5069				
452- CQUAD2	5038	5009	5057	5058	5071	5070				
453- CQUAD2	5039	5009	5058	5059	5072	5071				
454- CQUAD2	5040	5009	5059	5060	5073	5072				
455- CQUAD2	5041	5009	5065	5066	5079	5078				
456- CQUAD2	5042	5009	5066	5067	5080	5079				
457- CQUAD2	5043	5009	5067	5068	5081	5080				
458- CQUAD2	5044	5009	5068	5069	5082	5081				
459- CQUAD2	5045	5009	5069	5070	5083	5082				
460- CQUAD2	5046	5009	5070	5071	5084	5083				
461- CQUAD2	5047	5009	5071	5072	5085	5084				
462- CQUAD2	5048	5009	5072	5073	5086	5085				
463- CQUAD2	5049	5009	5078	5079	5092	5091				
464- CQUAD2	5050	5009	5079	5080	5093	5092				
465- CQUAD2	5051	5009	5080	5081	5094	5093				
466- CQUAD2	5052	5009	5081	5082	5095	5094				
467- CQUAD2	5053	5009	5082	5083	5096	5095				
468- CQUAD2	5054	5009	5083	5084	5097	5096				
469- CQUAD2	5055	5009	5084	5085	5098	5097				
470- CQUAD2	5056	5009	5085	5086	5099	5098				
471- CQUAD2	5057	5009	5091	5092	5105	5104				
472- CQUAD2	5058	5009	5092	5093	5106	5105				
473- CQUAD2	5059	5009	5093	5094	5107	5106				
474- CQUAD2	5060	5009	5094	5095	5108	5107				
475- CQUAD2	5061	5009	5095	5096	5109	5108				
476- CQUAD2	5062	5009	5096	5097	5110	5109				
477- CQUAD2	5063	5009	5097	5098	5111	5110				
478- CQUAD2	5064	5009	5098	5099	5112	5111				
479- CQUAD2	5065	5009	5104	5105	5118	5117				
480- CQUAD2	5066	5009	5105	5106	5119	5118				
481- CQUAD2	5067	5009	5106	5107	5120	5119				
482- CQUAD2	5068	5009	5107	5108	5121	5120				
483- CQUAD2	5069	5009	5108	5109	5122	5121				
484- CQUAD2	5070	5009	5109	5110	5123	5122				
485- CQUAD2	5071	5009	5110	5111	5124	5123				
486- CQUAD2	5072	5009	5111	5112	5125	5124				
487- CQUAD2	5073	5073	5117	5118	5131	5130				
488- CQUAD2	5074	5073	5118	5119	5132	5131				
489- CQUAD2	5075	5073	5119	5120	5133	5132				
490- CQUAD2	5076	5073	5120	5121	5134	5133				
491- CQUAD2	5077	5073	5121	5122	5135	5134				
492- CQUAD2	5078	5073	5122	5123	5136	5135				
493- CQUAD2	5079	5073	5123	5124	5137	5136				
494- CQUAD2	5080	5073	5124	5125	5138	5137				
495- CQUAD2	5081	5073	5130	5131	5144	5143				
496- CQUAD2	5082	5073	5131	5132	5145	5144				
497- CQUAD2	5083	5073	5132	5133	5146	5145				
498- CQUAD2	5084	5073	5133	5134	5147	5146				
499- CQUAD2	5085	5073	5134	5135	5148	5147				
500- CQUAD2	5086	5073	5135	5136	5149	5148				

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FRETT MODES %0-HARMONIC#

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
501- CQUAD2	5087	5073	5136	5137	5150	5149				
502- CQUAD2	5088	5073	5137	5138	5151	5150				
503- CQUAD2	5089	5073	5143	5144	5157	5156				
504- CQUAD2	5090	5073	5144	5145	5158	5157				
505- CQUAD2	5091	5073	5145	5146	5159	5158				
506- CQUAD2	5092	5073	5146	5147	5160	5159				
507- CQUAD2	5093	5073	5147	5148	5161	5160				
508- CQUAD2	5094	5073	5148	5149	5162	5161				
509- CQUAD2	5095	5073	5149	5150	5163	5162				
510- CQUAD2	5096	5073	5150	5151	5164	5163				
511- CQUAD2	5097	5073	5156	5157	5170	5169				
512- CQUAD2	5098	5073	5157	5158	5171	5170				
513- CQUAD2	5099	5073	5158	5159	5172	5171				
514- CQUAD2	5100	5073	5159	5160	5173	5172				
515- CQUAD2	5101	5073	5160	5161	5174	5173				
516- CQUAD2	5102	5073	5161	5162	5175	5174				
517- CQUAD2	5103	5073	5162	5163	5176	5175				
518- CQUAD2	5104	5073	5163	5164	5177	5176				
519- CQUAD2	5105	5073	5169	5170	5183	5182				
520- CQUAD2	5106	5073	5170	5171	5184	5183				
521- CQUAD2	5107	5073	5171	5172	5185	5184				
522- CQUAD2	5108	5073	5172	5173	5186	5185				
523- CQUAD2	5109	5073	5173	5174	5187	5186				
524- CQUAD2	5110	5073	5174	5175	5188	5187				
525- CQUAD2	5111	5073	5175	5176	5189	5188				
526- CQUAD2	5112	5073	5176	5177	5190	5189				
527- CQUAD2	5113	5113	5183	5196	5195	5182				
528- CQUAD2	5114	5113	5184	5197	5196	5183				
529- CQUAD2	5115	5113	5185	5198	5197	5184				
530- CQUAD2	5116	5113	5186	5199	5198	5185				
531- CQUAD2	5117	5117	5187	5200	5199	5186				
532- CQUAD2	5118	5113	5188	5201	5200	5187				
533- CQUAD2	5119	5113	5189	5202	5201	5188				
534- CQUAD2	5120	5117	5190	5203	5202	5189				
535- CQUAD2	8010	8010	8010	8011	8031	8030				
536- CQUAD2	8011	8010	8011	8012	8032	8031				
537- CQUAD2	8012	8010	8012	8013	8033	8032				
538- CQUAD2	8013	8010	8013	8014	8034	8033				
539- CQUAD2	8014	8010	8014	8015	8035	8034				
540- CQUAD2	8015	8010	8015	8016	8036	8035				
541- CQUAD2	8016	8010	8016	8017	8037	8036				
542- CQUAD2	8017	8010	8017	8018	8038	8037				
543- CQUAD2	8030	8010	8030	8031	8051	8050				
544- CQUAD2	8031	8010	8031	8032	8052	8051				
545- CQUAD2	8032	8010	8032	8033	8053	8052				
546- CQUAD2	8033	8010	8033	8034	8054	8053				
547- CQUAD2	8034	8010	8034	8035	8055	8054				
548- CQUAD2	8035	8010	8035	8036	8056	8055				
549- CQUAD2	8036	8010	8036	8037	8057	8056				
550- CQUAD2	8037	8010	8037	8038	8058	8057				

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE,UNIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC#

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
551- CQUAD2	8050	8010	8050	8051	8071	8070				
552- CQUAD2	8051	8010	8051	8052	8072	8071				
553- CQUAD2	8052	8010	8052	8053	8073	8072				
554- CQUAD2	8053	8010	8053	8054	8075	8073				
555- CQUAD2	8054	8010	8054	8055	8076	8075				
556- CQUAD2	8055	8010	8055	8056	8077	8076				
557- CQUAD2	8056	8010	8056	8057	8078	8077				
558- CQUAD2	8057	8010	8057	8058	8079	8078				
559- CQUAD2	8070	8150	5117	5118	8111	8110				
560- CQUAD2	8071	8150	5118	5119	8112	8111				
561- CQUAD2	8072	8072	5119	5120	8113	8112				
562- CQUAD2	8073	8072	5120	5126	8114	8113				
563- CQUAD2	8074	8072	5126	5121	8115	8114				
564- CQUAD2	8075	8072	5121	5122	8116	8115				
565- CQUAD2	8076	8150	5122	5123	8117	8116				
566- CQUAD2	8077	8150	5123	5124	8118	8117				
567- CQUAD2	8078	8150	5124	5125	8119	8118				
568- CQUAD2	8090	8150	8110	8111	8131	8130				
569- CQUAD2	8091	8150	8111	8112	8132	8131				
570- CQUAD2	8092	8092	8112	8113	8133	8132				
571- CQUAD2	8093	8072	8113	8114	8134	8133				
572- CQUAD2	8094	8072	8114	8115	8135	8134				
573- CQUAD2	8095	8092	8115	8116	8136	8135				
574- CQUAD2	8096	8150	8116	8117	8137	8136				
575- CQUAD2	8097	8150	8117	8118	8138	8137				
576- CQUAD2	8098	8150	8118	8119	8139	8138				
577- CQUAD2	8110	8150	8130	8131	8151	8150				
578- CQUAD2	8111	8150	8131	8132	8152	8151				
579- CQUAD2	8112	8112	8132	8133	8153	8152				
580- CQUAD2	8113	8072	8133	8134	8154	8153				
581- CQUAD2	8114	8072	8134	8135	8155	8154				
582- CQUAD2	8115	8112	8135	8136	8156	8155				
583- CQUAD2	8116	8150	8136	8137	8157	8156				
584- CQUAD2	8117	8150	8137	8138	8158	8157				
585- CQUAD2	8118	8150	8138	8139	8159	8158				
586- CQUAD2	8130	8150	8150	8151	8071	8070				
587- CQUAD2	8131	8150	8151	8152	8072	8071				
588- CQUAD2	8132	8112	8152	8153	8073	8072				
589- CQUAD2	8133	8072	8153	8154	8074	8073				
590- CQUAD2	8134	8072	8154	8155	8075	8074				
591- CQUAD2	8135	8112	8155	8156	8076	8075				
592- CQUAD2	8136	8150	8156	8157	8077	8076				
593- CQUAD2	8137	8150	8157	8158	8078	8077				
594- CQUAD2	8138	8150	8158	8159	8079	8078				
595- CQUAD2	8150	8150	8070	8071	8171	8170				
596- CQUAD2	8151	8150	8071	8072	8172	8171				
597- CQUAD2	8152	8150	8072	8073	8173	8172				
598- CQUAD2	8153	8153	8073	8075	8174	8173				
599- CQUAD2	8154	8150	8075	8076	8175	8174				
600- CQUAD2	8155	8150	8076	8077	8176	8175				

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 10-HARMONIC

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
601-	CQUAD2	8156	8150	8077	8078	8177	8176			
602-	CQUAD2	8157	8150	8078	8079	8179	8177			
603-	CQUAD2	8170	8151	8170	8171	8191	8190			
604-	CQUAD2	8171	8151	8171	8172	8192	8191			
605-	CQUAD2	8172	8151	8172	8173	8193	8192			
606-	CQUAD2	8173	8151	8173	8174	8194	8193			
607-	CQUAD2	8174	8151	8174	8175	8195	8194			
608-	CQUAD2	8175	8151	8175	8176	8196	8195			
609-	CQUAD2	8176	8151	8176	8177	8197	8196			
610-	CQUAD2	8177	8151	8177	8178	8198	8197			
611-	CQUAD2	8190	8190	8190	8191	8211	8210			
612-	CQUAD2	8191	8190	8191	8192	8212	8211			
613-	CQUAD2	8192	8190	8192	8193	8213	8212			
614-	CQUAD2	8193	8190	8193	8194	8214	8213			
615-	CQUAD2	8194	8190	8194	8195	8215	8214			
616-	CQUAD2	8195	8190	8195	8196	8216	8215			
617-	CQUAD2	8196	8151	8196	8197	8217	8216			
618-	CQUAD2	8197	8151	8197	8198	8218	8217			
619-	CQUAD2	8210	8190	8210	8211	8231	8230			
620-	CQUAD2	8211	8190	8211	8212	8232	8231			
621-	CQUAD2	8212	8190	8212	8213	8233	8232			
622-	CQUAD2	8213	8190	8213	8214	8234	8233			
623-	CQUAD2	8214	8190	8214	8215	8235	8234			
624-	CQUAD2	8215	8190	8215	8216	8236	8235			
625-	CQUAD2	8216	8190	8216	8217	8237	8236			
626-	CQUAD2	8217	8190	8217	8218	8238	8237			
627-	CQUAD2	8230	8230	8230	8231	8251	8250			
628-	CQUAD2	8231	8190	8231	8232	8252	8251			
629-	CQUAD2	8232	8190	8232	8233	8253	8252			
630-	CQUAD2	8233	8190	8233	8234	8254	8253			
631-	CQUAD2	8234	8190	8234	8235	8255	8254			
632-	CQUAD2	8235	8190	8235	8236	8256	8255			
633-	CQUAD2	8236	8190	8236	8237	8257	8256			
634-	CQUAD2	8237	8190	8237	8238	8258	8257			
635-	CQUAD2	8250	8151	8250	8251	8271	8270			
636-	CQUAD2	8251	8011	8251	8252	8272	8271			
637-	CQUAD2	8252	8190	8252	8253	8273	8272			
638-	CQUAD2	8253	8190	8253	8254	8274	8273			
639-	CQUAD2	8254	8190	8254	8255	8275	8274			
640-	CQUAD2	8255	8190	8255	8256	8276	8275			
641-	CQUAD2	8256	8190	8256	8257	8277	8276			
642-	CQUAD2	8257	8190	8257	8258	8278	8277			
643-	CQUAD2	8270	8151	8270	8271	8291	8290			
644-	CQUAD2	8271	8151	8271	8272	8292	8291			
645-	CQUAD2	8272	8190	8272	8273	8293	8292			
646-	CQUAD2	8273	8190	8273	8274	8294	8293			
647-	CQUAD2	8274	8190	8274	8275	8295	8294			
648-	CQUAD2	8275	8190	8275	8276	8296	8295			
649-	CQUAD2	8276	8190	8276	8277	8297	8296			
650-	CQUAD2	8277	8190	8277	8278	8298	8297			

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 10-HARMONIC

S O R T E D B U L K D A T A E C H O																					
CARD	COUNT .	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
651-	CQUAD2	8290		8151		8290		8291		8311		8310									
652-	CQUAD2	8291		8151		8291		8292		8312		8311									
653-	CQUAD2	8292		8230		8292		8293		8313		8312									
654-	CQUAD2	8293		8190		8293		8294		8314		8313									
655-	CQUAD2	8294		8190		8294		8295		8315		8314									
656-	CQUAD2	8295		8190		8295		8296		8316		8315									
657-	CQUAD2	8296		8190		8296		8297		8317		8316									
658-	CQUAD2	8297		8190		8297		8298		8318		8317									
659-	CQUAD2	8310		8151		8310		8311		8332		8330									
660-	CQUAD2	8311		8151		8311		8312		8333		8332									
661-	CQUAD2	8312		8151		8312		8313		8335		8333									
662-	CQUAD2	8313		8190		8313		8314		8336		8335									
663-	CQUAD2	8314		8190		8314		8315		8337		8336									
664-	CQUAD2	8315		8190		8315		8316		8338		8337									
665-	CQUAD2	8316		8190		8316		8317		8339		8338									
666-	CQUAD2	8317		8190		8317		8318		8340		8339									
667-	CQUAD2	8330		8330		8330		8332		8371		8370									
668-	CQUAD2	8331		8011		8332		8333		8372		8371									
669-	CQUAD2	8332		8151		8333		8335		8373		8372									
670-	CQUAD2	8333		8011		8335		8336		8374		8373									
671-	CQUAD2	8334		8011		8336		8337		8375		8374									
672-	CQUAD2	8335		8011		8337		8338		8376		8375									
673-	CQUAD2	8336		8011		8338		8339		8377		8376									
674-	CQUAD2	8337		8011		8339		8340		8378		8377									
675-	CQUAD2	8350		8010		8370		8371		8351		8350									
676-	CQUAD2	8351		8010		8371		8372		8352		8351									
677-	CQUAD2	8352		8010		8372		8373		8353		8352									
678-	CQUAD2	8353		8010		8373		8374		8354		8353									
679-	CQUAD2	8354		8010		8374		8375		8355		8354									
680-	CQUAD2	8355		8010		8375		8376		8356		8355									
681-	CQUAD2	8356		8010		8376		8377		8357		8356									
682-	CQUAD2	8357		8010		8377		8378		8358		8357									
683-	CQUAD2	8370		8011		8370		8371		8391		8390									
684-	CQUAD2	8371		8011		8371		8372		8392		8391									
685-	CQUAD2	8372		8011		8372		8373		8393		8392									
686-	CQUAD2	8373		8011		8373		8374		8394		8393									
687-	CQUAD2	8374		8011		8374		8375		8395		8394									
688-	CQUAD2	8375		8011		8375		8376		8396		8395									
689-	CQUAD2	8376		8011		8376		8377		8397		8396									
690-	CQUAD2	8377		8011		8377		8378		8398		8397									
691-	CQUAD2	8390		8011		8390		8391		8411		8410									
692-	CQUAD2	8391		8011		8391		8392		8412		8411									
693-	CQUAD2	8392		8011		8392		8393		8413		8412									
694-	CQUAD2	8393		8011		8393		8394		8414		8413									
695-	CQUAD2	8394		8011		8394		8395		8415		8414									
696-	CQUAD2	8395		8011		8395		8396		8416		8415									
697-	CQUAD2	8396		8011		8396		8397		8417		8416									
698-	CQUAD2	8397		8011		8397		8398		8418		8417									
699-	CQUAD2	8410		8011		8410		8411		8431		8430									
700-	CQUAD2	8411		8011		8411		8412		8432		8431									

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, UNIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

S O R T E D B U L K D A T A E C H O											
CARD	COUNT	1	2	3	4	5	6	7	8	9	10
701- CQUAD2	8412	8011	8412	8413	8433	8432					
702- CQUAD2	8413	8011	8413	8414	8434	8433					
703- CQUAD2	8414	8011	8414	8415	8435	8434					
704- CQUAD2	8415	8011	8415	8416	8436	8435					
705- CQUAD2	8416	8011	8416	8417	8437	8436					
706- CQUAD2	8417	8011	8417	8418	8438	8437					
707- CTRIA2	5001	5099	5001	5014	5013	.0					
708- CTRIA2	5002	5099	5001	5015	5014	.0					
709- CTRIA2	5003	5099	5001	5016	5015	.0					
710- CTRIA2	5004	5099	5001	5017	5016	.0					
711- CTRIA2	5005	5099	5001	5018	5017	.0					
712- CTRIA2	5006	5099	5001	5019	5018	.0					
713- CTRIA2	5007	5099	5001	5020	5019	.0					
714- CTRIA2	5008	5099	5001	5021	5020	.0					
715- CTRIA2	5121	5113	5195	5196	5204	.0					
716- CTRIA2	5122	5113	5196	5197	5204	.0					
717- CTRIA2	5123	5113	5197	5198	5204	.0					
718- CTRIA2	5124	5113	5198	5199	5204	.0					
719- CTRIA2	5125	5113	5199	5200	5204	.0					
720- CTRIA2	5126	5113	5200	5201	5204	.0					
721- CTRIA2	5127	5113	5201	5202	5204	.0					
722- CTRIA2	5128	5113	5202	5203	5204	.0					
723- CTRIA2	8000	8000	8001	8010	8011						
724- CTRIA2	8001	8000	8001	8011	8012						
725- CTRIA2	8002	8000	8001	8012	8013						
726- CTRIA2	8003	8000	8001	8013	8014						
727- CTRIA2	8004	8000	8001	8014	8015						
728- CTRIA2	8005	8000	8001	8015	8016						
729- CTRIA2	8006	8000	8001	8016	8017						
730- CTRIA2	8007	8000	8001	8017	8018						
731- CTRIA2	8430	8001	8440	8430	8431						
732- CTRIA2	8431	8001	8440	8431	8432						
733- CTRIA2	8432	8001	8440	8432	8433						
734- CTRIA2	8433	8001	8440	8433	8434						
735- CTRIA2	8434	8001	8440	8434	8435						
736- CTRIA2	8435	8001	8440	8435	8436						
737- CTRIA2	8436	8001	8440	8436	8437						
738- CTRIA2	8437	8001	8440	8437	8438						
739- FIGC	1	DET	MAX								CEIGC
740- CEIGC	0.0	550.0	0.0	450.0	1.00	3	6				
741- FIGR	3	UINV	30.	60.	3	6				1. -3	CEIG3
742- CEIG3	MAX										
743- FLSYM	2	S	S								
744- FSLIST		5012	5011	5010	5009	AXIS					
745- FSLIST	6.54-6	8181	8180	8179	AXIS						
746- GRID	5001	3001	19.96	.0	.0	3001					
747- GRID	5126	696	83.78	-19.41073	9071	69					
748- GRID	5204	5001	.0	.0	97.98	3001					
749- GRID	8001	696	101.86	.0	.0	696					
750- GRID	8010	69	6.40	.0	102.55	69					

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 20-HARMONICS

S O R T E D B U L K D A T A E C H O															
CARD	1	2	3	4	5	6	7	8	9	10					
COUNT	1	2	3	4	5	6	7	8	9	10					
751- GRID	8011	69	6.40	22.5	102.55	69									
752- GRID	8012	69	6.40	45.0	102.55	69									
753- GRID	8013	69	6.40	67.5	102.55	69									
754- GRID	8014	69	6.40	90.0	102.55	69									
755- GRID	8015	69	6.40	112.5	102.55	69									
756- GRID	8016	69	6.40	135.0	102.55	69									
757- GRID	8017	69	6.40	157.5	102.55	69									
758- GRID	8018	69	6.40	180.0	102.55	69									
759- GRID	8030	69	12.61	.0	105.32	69									
760- GRID	8031	69	12.61	22.5	105.32	69									
761- GRID	8032	69	12.61	45.0	105.32	69									
762- GRID	8033	69	12.61	67.5	105.32	69									
763- GRID	8034	69	12.61	90.0	105.32	69									
764- GRID	8035	69	12.61	112.5	105.32	69									
765- GRID	8036	69	12.61	135.0	105.32	69									
766- GRID	8037	69	12.61	157.5	105.32	69									
767- GRID	8038	69	12.61	180.0	105.32	69									
768- GRID	8050	69	17.91	.0	110.38	69									
769- GRID	8051	69	17.91	22.5	110.38	69									
770- GRID	8052	69	17.91	45.0	110.38	69									
771- GRID	8053	69	17.91	67.5	110.38	69									
772- GRID	8054	69	17.91	90.0	110.38	69									
773- GRID	8055	69	17.91	112.5	110.38	69									
774- GRID	8056	69	17.91	135.0	110.38	69									
775- GRID	8057	69	17.91	157.5	110.38	69									
776- GRID	8058	69	17.91	180.0	110.38	69									
777- GRID	8070	69	19.80	.0	113.70	69									
778- GRID	8071	69	19.80	22.5	113.70	69									
779- GRID	8072	69	19.80	45.0	113.70	69									
780- GRID	8073	69	19.80	67.5	113.70	69									
781- GRID	8074	696	113.70	-19.41073.9071	69										
782- GRID	8075	69	19.80	90.0	113.70	69									
783- GRID	8076	69	19.80	112.5	113.70	69									
784- GRID	8077	69	19.80	135.0	113.70	69									
785- GRID	8078	69	19.80	157.5	113.70	69									
786- GRID	8079	69	19.80	180.0	113.70	69									
787- GRID	8110	69	19.80	.0	91.98	69									
788- GRID	8111	69	19.80	22.5	91.98	69									
789- GRID	8112	69	19.80	45.0	91.98	69									
790- GRID	8113	69	19.80	67.5	91.98	69									
791- GRID	8114	696	91.98	-19.41073.9071	69										
792- GRID	8115	69	19.80	90.0	91.98	69									
793- GRID	8116	69	19.80	112.5	91.98	69									
794- GRID	8117	69	19.80	135.0	91.98	69									
795- GRID	8118	69	19.80	157.5	91.98	69									
796- GRID	8119	69	19.80	180.0	91.98	69									
797- GRID	8130	69	19.80	.0	99.98	69									
798- GRID	8131	69	19.80	22.5	99.98	69									
799- GRID	8132	69	19.80	45.0	99.98	69									
800- GRID	8133	69	19.80	67.5	99.98	69									

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HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
801- GRID	8134	696	99.98	-19.41073.9071	100						
802- GRID	8135	69	19.80	90.0	99.98	69					
803- GRID	8136	69	19.80	112.5	99.98	69					
804- GRID	8137	69	19.80	135.0	99.98	69					
805- GRID	8138	69	19.80	157.5	99.98	69					
806- GRID	8139	69	19.80	180.0	99.98	69					
807- GRID	8140	696	99.98	.0	3.9071	696	456				
808- GRID	8150	69	19.80	.0	106.86	69					
809- GRID	8151	69	19.80	22.5	106.86	69					
810- GRID	8152	69	19.80	45.0	106.86	69					
811- GRID	8153	69	19.80	67.5	106.86	69					
812- GRID	8154	696	106.86	-19.41073.9071	69						
813- GRID	8155	69	19.80	90.0	106.86	69					
814- GRID	8156	69	19.80	112.5	106.86	69					
815- GRID	8157	69	19.80	135.0	106.86	69					
816- GRID	8158	69	19.80	157.5	106.86	69					
817- GRID	8159	69	19.80	180.0	106.86	69					
818- GRID	8209	696	148.756	.0	21.9561	696	1456				
819- GRID	8299	696	229.156	.0	.0	696	456				
820- GRID	8328	696	245.7536	.0	24.9514	696	456				
821- GRID	8329	696	245.7536	-13.75	24.9514	3002	12456				
822- GRID	8331	69	19.80	11.25	245.753669						
823- GRID	8334	69	19.80	56.25	245.753669						
824- GRID	8341	696	245.7536	.0	.0	696	456				
825- GRID	8350	69	19.80	.0	270.988	69					
826- GRID	8351	69	19.80	22.5	270.988	69					
827- GRID	8352	696	270.988	-14.9702	12.9588	101					
828- GRID	8353	69	19.80	67.5	270.988	69					
829- GRID	8354	69	19.80	90.0	270.988	69					
830- GRID	8355	696	270.988	-18.8181	-6.1577	101					
831- GRID	8356	69	19.80	135.0	270.988	69					
832- GRID	8357	69	19.80	157.5	270.988	69					
833- GRID	8358	69	19.80	180.0	270.988	69					
834- GRID	8359	696	270.988	.0	12.9588	696	456				
835- GRID	8360	696	270.988	.0	-6.1577	696	456				
836- GRID	8440	696	269.44	.0	.0	696					
837- GRIDB	5013	5001	9.000	.000	23.000	5100				5012	
838- GRIDB	5014	5001	9.000	22.500	23.000	5100				5012	
839- GRIDB	5015	5001	9.000	45.000	23.000	5100				5012	
840- GRIDB	5016	5001	9.000	67.500	23.000	5100				5012	
841- GRIDB	5017	5001	9.000	90.000	23.000	5100				5012	
842- GRIDB	5018	5001	9.000	112.500	23.000	5100				5012	
843- GRIDB	5019	5001	9.000	135.000	23.000	5100				5012	
844- GRIDB	5020	5001	9.000	157.500	23.000	5100				5012	
845- GRIDB	5021	5001	9.000	180.000	23.000	5100				5012	
846- GRIDB	5026	5001	14.200	.000	31.930	5100				5025	
847- GRIDB	5027	5001	14.200	22.500	31.930	5100				5025	
848- GRIDB	5028	5001	14.200	45.000	31.930	5100				5025	
849- GRIDB	5029	5001	14.200	67.500	31.930	5100				5025	
850- GRIDB	5030	5001	14.200	90.000	31.930	5100				5025	



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HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, UNIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
851- GRIDB	5031	5001	14.200	112.500	31.930	5100			5025	
852- GRIDB	5032	5001	14.200	135.000	31.930	5100			5025	
853- GRIDB	5033	5001	14.200	157.500	31.930	5100			5025	
854- GRIDB	5034	5001	14.200	180.000	31.930	5100			5025	
855- GRIDB	5039	5001	16.200	.000	40.380	5100			5038	
856- GRIDB	5040	5001	16.200	22.500	40.380	5100			5038	
857- GRIDB	5041	5001	16.200	45.000	40.380	5100			5038	
858- GRIDB	5042	5001	16.200	67.500	40.380	5100			5038	
859- GRIDB	5043	5001	16.200	90.000	40.380	5100			5038	
860- GRIDB	5044	5001	16.200	112.500	40.380	5100			5038	
861- GRIDB	5045	5001	16.200	135.000	40.380	5100			5038	
862- GRIDB	5046	5001	16.200	157.500	40.380	5100			5038	
863- GRIDB	5047	5001	16.200	180.000	40.380	5100			5038	
864- GRIDB	5052	5001	18.000	.000	48.380	5100			5051	
865- GRIDB	5053	5001	18.000	22.500	48.380	5100			5051	
866- GRIDB	5054	5001	18.000	45.000	48.380	5100			5051	
867- GRIDB	5055	5001	18.000	67.500	48.380	5100			5051	
868- GRIDB	5056	5001	18.000	90.000	48.380	5100			5051	
869- GRIDB	5057	5001	18.000	112.500	48.380	5100			5051	
870- GRIDB	5058	5001	18.000	135.000	48.380	5100			5051	
871- GRIDB	5059	5001	18.000	157.500	48.380	5100			5051	
872- GRIDB	5060	5001	18.000	180.000	48.380	5100			5051	
873- GRIDB	5065	5001	19.875	.000	56.280	5100			5064	
874- GRIDB	5066	5001	19.875	22.500	56.280	5100			5064	
875- GRIDB	5067	5001	19.875	45.000	56.280	5100			5064	
876- GRIDB	5068	5001	19.875	67.500	56.280	5100			5064	
877- GRIDB	5069	5001	19.875	90.000	56.280	5100			5064	
878- GRIDB	5070	5001	19.875	112.500	56.280	5100			5064	
879- GRIDB	5071	5001	19.875	135.000	56.280	5100			5064	
880- GRIDB	5072	5001	19.875	157.500	56.280	5100			5064	
881- GRIDB	5073	5001	19.875	180.000	56.280	5100			5064	
882- GRIDB	5078	5001	19.875	.000	65.780	5100			5077	
883- GRIDB	5079	5001	19.875	22.500	65.780	5100			5077	
884- GRIDB	5080	5001	19.875	45.000	65.780	5100			5077	
885- GRIDB	5081	5001	19.875	67.500	65.780	5100			5077	
886- GRIDB	5082	5001	19.875	90.000	65.780	5100			5077	
887- GRIDB	5083	5001	19.875	112.500	65.780	5100			5077	
888- GRIDB	5084	5001	19.875	135.000	65.780	5100			5077	
889- GRIDB	5085	5001	19.875	157.500	65.780	5100			5077	
890- GRIDB	5086	5001	19.875	180.000	65.780	5100			5077	
891- GRIDB	5091	5001	19.875	.000	71.780	5100			5090	
892- GRIDB	5092	5001	19.875	22.500	71.780	5100			5090	
893- GRIDB	5093	5001	19.875	45.000	71.780	5100			5090	
894- GRIDB	5094	5001	19.875	67.500	71.780	5100			5090	
895- GRIDB	5095	5001	19.875	90.000	71.780	5100			5090	
896- GRIDB	5096	5001	19.875	112.500	71.780	5100			5090	
897- GRIDB	5097	5001	19.875	135.000	71.780	5100			5090	
898- GRIDB	5098	5001	19.875	157.500	71.780	5100			5090	
899- GRIDB	5099	5001	19.875	180.000	71.780	5100			5090	
900- GRIDB	5104	5001	19.875	.000	77.780	5100			5103	

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 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

S O R T E D B U L K D A T A E C H O										
CARD		1	2	3	4	5	6	7	8	9
COUNT										
901-	GRIDB	5105	5001	19.875	22.500	77.780	5100			5103
902-	GRIDB	5106	5001	19.875	45.000	77.780	5100			5103
903-	GRIDB	5107	5001	19.875	67.500	77.780	5100			5103
904-	GRIDB	5108	5001	19.875	90.000	77.780	5100			5103
905-	GRIDB	5109	5001	19.875	112.500	77.780	5100			5103
906-	GRIDB	5110	5001	19.875	135.000	77.780	5100			5103
907-	GRIDB	5111	5001	19.875	157.500	77.780	5100			5103
908-	GRIDB	5112	5001	19.875	180.000	77.780	5100			5103
909-	GRIDB	5117	5001	19.8	.000	83.780	5100			5116
910-	GRIDB	5118	5001	19.8	22.500	83.780	5100			5116
911-	GRIDB	5119	5001	19.8	45.000	83.780	5100			5116
912-	GRIDB	5120	5001	19.8	67.500	83.780	5100			5116
913-	GRIDB	5121	5001	19.8	90.000	83.780	5100			5116
914-	GRIDB	5122	5001	19.8	112.500	83.780	5100			5116
915-	GRIDB	5123	5001	19.8	135.000	83.780	5100			5116
916-	GRIDB	5124	5001	19.8	157.500	83.780	5100			5116
917-	GRIDB	5125	5001	19.8	180.000	83.780	5100			5116
918-	GRIDB	5130	5001	18.54	.0	87.93	5100			5129
919-	GRIDB	5131	5001	18.54	22.5	87.93	5100			5129
920-	GRIDB	5132	5001	18.54	45.0	87.93	5100			5129
921-	GRIDB	5133	5001	18.54	67.5	87.93	5100			5129
922-	GRIDB	5134	5001	18.54	90.0	87.93	5100			5129
923-	GRIDB	5135	5001	18.54	112.5	87.93	5100			5129
924-	GRIDB	5136	5001	18.54	135.0	87.93	5100			5129
925-	GRIDB	5137	5001	18.54	157.5	87.93	5100			5129
926-	GRIDB	5138	5001	18.54	180.0	87.93	5100			5129
927-	GRIDB	5143	5001	16.28	.0	91.28	5100			5142
928-	GRIDB	5144	5001	16.28	22.5	91.28	5100			5142
929-	GRIDB	5145	5001	16.28	45.0	91.28	5100			5142
930-	GRIDB	5146	5001	16.28	67.5	91.28	5100			5142
931-	GRIDB	5147	5001	16.28	90.0	91.28	5100			5142
932-	GRIDB	5148	5001	16.28	112.5	91.28	5100			5142
933-	GRIDB	5149	5001	16.28	135.0	91.28	5100			5142
934-	GRIDB	5150	5001	16.28	157.5	91.28	5100			5142
935-	GRIDB	5151	5001	16.28	180.0	91.28	5100			5142
936-	GRIDB	5156	5001	12.29	.0	94.53	5100			5154
937-	GRIDB	5157	5001	12.29	22.5	94.53	5100			5154
938-	GRIDB	5158	5001	12.29	45.0	94.53	5100			5154
939-	GRIDB	5159	5001	12.29	67.5	94.53	5100			5154
940-	GRIDB	5160	5001	12.29	90.0	94.53	5100			5154
941-	GRIDB	5161	5001	12.29	112.5	94.53	5100			5154
942-	GRIDB	5162	5001	12.29	135.0	94.53	5100			5154
943-	GRIDB	5163	5001	12.29	157.5	94.53	5100			5154
944-	GRIDB	5164	5001	12.29	180.0	94.53	5100			5154
945-	GRIDB	5169	5001	4.274	.0	96.083	5100			5166
946-	GRIDB	5170	5001	4.274	22.5	96.083	5100			5166
947-	GRIDB	5171	5001	4.274	45.0	96.083	5100			5166
948-	GRIDB	5172	5001	4.274	67.5	96.083	5100			5166
949-	GRIDB	5173	5001	4.274	90.0	96.083	5100			5166
950-	GRIDB	5174	5001	4.274	112.5	96.083	5100			5166

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180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREF-FREE MODES %0-HARMONIC

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
951- GRIDB	5175	5001	9.274	135.0	96.083	5100			5166	
952- GRIDB	5176	5001	9.274	157.5	96.083	5100			5166	
953- GRIDB	5177	5001	9.274	180.0	96.083	5100			5166	
954- GRIDB	5182	5001	5.266	.0	97.386	5100			5179	
955- GRIDB	5183	5001	5.266	22.5	97.386	5100			5179	
956- GRIDB	5184	5001	5.266	45.	97.386	5100			5179	
957- GRIDB	5185	5001	5.266	67.5	97.386	5100			5179	
958- GRIDB	5186	5001	5.266	90.	97.386	5100			5179	
959- GRIDB	5187	5001	5.266	112.5	97.386	5100			5179	
960- GRIDB	5188	5001	5.266	135.0	97.386	5100			5179	
961- GRIDB	5189	5001	5.266	157.5	97.386	5100			5179	
962- GRIDB	5190	5001	5.266	180.	97.386	5100			5179	
963- GRIDB	5195	5001	1.785	.0	97.912	5100			5178	
964- GRIDB	5196	5001	1.785	22.5	97.912	5100			5178	
965- GRIDB	5197	5001	1.785	45.	97.912	5100			5178	
966- GRIDB	5198	5001	1.785	67.5	97.912	5100			5178	
967- GRIDB	5199	5001	1.785	90.	97.912	5100			5178	
968- GRIDB	5200	5001	1.785	112.5	97.912	5100			5178	
969- GRIDB	5201	5001	1.785	135.0	97.912	5100			5178	
970- GRIDB	5202	5001	1.785	157.5	97.912	5100			5178	
971- GRIDB	5203	5001	1.785	180.	97.912	5100			5178	
972- GRIDB	8170	69	19.80	.0	128.35	5100			8181	
973- GRIDB	8171	69	19.80	22.5	128.35	5100			8181	
974- GRIDB	8172	69	19.80	45.0	128.35	5100			8181	
975- GRIDB	8173	69	19.80	67.5	128.35	5100			8181	
976- GRIDB	8174	69	19.80	90.0	128.35	5100			8181	
977- GRIDB	8175	69	19.80	112.5	128.35	5100			8181	
978- GRIDB	8176	69	19.80	135.0	128.35	5100			8181	
979- GRIDB	8177	69	19.80	157.5	128.35	5100			8181	
980- GRIDB	8178	69	19.80	180.0	128.35	5100			8181	
981- GRIDB	8190	69	19.80	.0	139.06	5100			8201	
982- GRIDB	8191	69	19.80	22.5	139.06	5100			8201	
983- GRIDB	8192	69	19.80	45.0	139.06	5100			8201	
984- GRIDB	8193	69	19.80	67.5	139.06	5100			8201	
985- GRIDB	8194	69	19.80	90.0	139.06	5100			8201	
986- GRIDB	8195	69	19.80	112.5	139.06	5100			8201	
987- GRIDB	8196	69	19.80	135.0	139.06	5100			8201	
988- GRIDB	8197	69	19.80	157.5	139.06	5100			8201	
989- GRIDB	8198	69	19.80	180.0	139.06	5100			8201	
990- GRIDB	8210	69	19.80	.0	148.756	5100			8221	
991- GRIDB	8211	69	19.80	22.5	148.756	5100			8221	
992- GRIDB	8212	69	19.80	45.0	148.756	5100			8221	
993- GRIDB	8213	69	19.80	67.5	148.756	5100			8221	
994- GRIDB	8214	69	19.80	90.0	148.756	5100			8221	
995- GRIDB	8215	69	19.80	112.5	148.756	5100			8221	
996- GRIDB	8216	69	19.80	135.0	148.756	5100			8221	
997- GRIDB	8217	69	19.80	157.5	148.756	5100			8221	
998- GRIDB	8218	69	19.80	180.0	148.756	5100			8221	
999- GRIDB	8230	69	19.80	.0	168.75	5100			8241	
1000- GRIDB	8231	69	19.80	22.5	168.75	5100			8241	

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 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES 10-HARMONICS

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1001- GRIDB	8232	69	19.80	45.0	168.75	5100			8241		
1002- GRIDB	8233	69	19.80	67.5	168.75	5100			8241		
1003- GRIDB	8234	69	19.30	90.0	168.75	5100			8241		
1004- GRIDB	8235	69	19.80	112.5	168.75	5100			8241		
1005- GRIDB	8236	69	19.80	135.0	168.75	5100			8241		
1006- GRIDB	8237	69	19.80	157.5	168.75	5100			8241		
1007- GRIDB	8238	69	19.80	180.0	168.75	5100			8241		
1008- GRIDB	8250	69	19.80	.0	188.75	5100			8261		
1009- GRIDB	8251	69	19.80	22.5	188.75	5100			8261		
1010- GRIDB	8252	69	19.80	45.0	188.75	5100			8261		
1011- GRIDB	8253	69	19.80	67.5	188.75	5100			8261		
1012- GRIDB	8254	69	19.80	90.0	188.75	5100			8261		
1013- GRIDB	8255	69	19.80	112.5	188.75	5100			8261		
1014- GRIDB	8256	69	19.80	135.0	188.75	5100			8261		
1015- GRIDB	8257	69	19.80	157.5	188.75	5100			8261		
1016- GRIDB	8258	69	19.80	180.0	188.75	5100			8261		
1017- GRIDB	8270	69	19.80	.0	209.13	5100			8281		
1018- GRIDB	8271	69	19.80	22.5	209.13	5100			8281		
1019- GRIDB	8272	69	19.80	45.0	209.13	5100			8281		
1020- GRIDB	8273	69	19.60	67.5	209.13	5100			8281		
1021- GRIDB	8274	69	19.80	90.0	209.13	5100			8281		
1022- GRIDB	8275	69	19.60	112.5	209.13	5100			8281		
1023- GRIDB	8276	69	19.80	135.0	209.13	5100			8281		
1024- GRIDB	8277	69	19.80	157.5	209.13	5100			8281		
1025- GRIDB	8278	69	19.80	180.0	209.13	5100			8281		
1026- GRIDB	8290	69	19.80	.0	229.156	5100			8302		
1027- GRIDB	8291	69	19.80	22.5	229.156	5100			8302		
1028- GRIDB	8292	69	19.80	45.0	229.156	5100			8302		
1029- GRIDB	8293	69	19.80	67.5	229.156	5100			8302		
1030- GRIDB	8294	69	19.80	90.0	229.156	5100			8302		
1031- GRIDB	8295	69	19.80	112.5	229.156	5100			8302		
1032- GRIDB	8296	69	19.80	135.0	229.156	5100			8302		
1033- GRIDB	8297	69	19.80	157.5	229.156	5100			8302		
1034- GRIDB	8298	69	19.80	180.0	229.156	5100			8302		
1035- GRIDB	8310	69	19.80	.0	237.30	5100			8321		
1036- GRIDB	8311	69	19.80	22.5	237.30	5100			8321		
1037- GRIDB	8312	69	19.80	45.0	237.30	5100			8321		
1038- GRIDB	8313	69	19.80	67.5	237.30	5100			8321		
1039- GRIDB	8314	69	19.80	90.0	237.30	5100			8321		
1040- GRIDB	8315	69	19.80	112.5	237.30	5100			8321		
1041- GRIDB	8316	69	19.80	135.0	237.30	5100			8321		
1042- GRIDB	8317	69	19.80	157.5	237.30	5100			8321		
1043- GRIDB	8318	69	19.80	180.0	237.30	5100			8321		
1044- GRIDB	8330	69	19.80	.0	245.75365	5100			8344		
1045- GRIDB	8332	69	19.60	22.5	245.75365	5100			8344		
1046- GRIDB	8333	69	19.80	45.0	245.75365	5100			8344		
1047- GRIDB	8335	69	19.80	67.5	245.75365	5100			8344		
1048- GRIDB	8336	69	19.80	90.0	245.75365	5100			8344		
1049- GRIDB	8337	69	19.80	112.5	245.75365	5100			8344		
1050- GRIDB	8338	69	19.80	135.0	245.75365	5100			8344		

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
1051- GRIDB	8339	69	19.80	157.5	245.75365100				8344	
1052- GRIDB	8340	69	19.80	180.0	245.75365100				8344	
1053- GRIDB	8370	69	19.80	.0	258.125 5100				8381	
1054- GRIDB	8371	69	19.80	22.5	258.125 5100				8381	
1055- GRIDB	8372	69	19.80	45.0	258.125 5100				8381	
1056- GRIDB	8373	69	19.80	67.5	258.125 5100				8381	
1057- GRIDB	8374	69	19.80	90.0	258.125 5100				8381	
1058- GRIDB	8375	69	19.80	112.5	258.125 5100				8381	
1059- GRIDB	8376	69	19.80	135.0	258.125 5100				8381	
1060- GRIDB	8377	69	19.80	157.5	258.125 5100				8381	
1061- GRIDB	8378	69	19.80	180.0	258.125 5100				8381	
1062- GRIDB	8390	69	17.91	.0	260.92 5100				8401	
1063- GRIDB	8391	69	17.91	22.5	260.92 5100				8401	
1064- GRIDB	8392	69	17.91	45.0	260.92 5100				8401	
1065- GRIDB	8393	69	17.91	67.5	260.92 5100				8401	
1066- GRIDB	8394	69	17.91	90.0	260.92 5100				8401	
1067- GRIDB	8395	69	17.91	112.5	260.92 5100				8401	
1068- GRIDB	8396	69	17.91	135.0	260.92 5100				8401	
1069- GRIDB	8397	69	17.91	157.5	260.92 5100				8401	
1070- GRIDB	8398	69	17.91	180.0	260.92 5100				8401	
1071- GRIDB	8410	69	12.61	.0	265.98 5100				8420	
1072- GRIDB	8411	69	12.61	22.5	265.98 5100				8420	
1073- GRIDB	8412	69	12.61	45.0	265.98 5100				8420	
1074- GRIDB	8413	69	12.61	67.5	265.98 5100				8420	
1075- GRIDB	8414	69	12.61	90.0	265.98 5100				8420	
1076- GRIDB	8415	69	12.61	112.5	265.98 5100				8420	
1077- GRIDB	8416	69	12.61	135.0	265.98 5100				8420	
1078- GRIDB	8417	69	12.61	157.5	265.98 5100				8420	
1079- GRIDB	8418	69	12.61	180.0	265.98 5100				8420	
1080- GRIDB	8430	69	6.40	.0	268.75 5100				8439	
1081- GRIDB	8431	69	6.40	22.5	268.75 5100				8439	
1082- GRIDB	8432	69	6.40	45.0	268.75 5100				8439	
1083- GRIDB	8433	69	6.40	67.5	268.75 5100				8439	
1084- GRIDB	8434	69	6.40	90.0	268.75 5100				8439	
1085- GRIDB	8435	69	6.40	112.5	268.75 5100				8439	
1086- GRIDB	8436	69	6.40	135.0	268.75 5100				8439	
1087- GRIDB	8437	69	6.40	157.5	268.75 5100				8439	
1088- GRIDB	8438	69	6.40	180.0	268.75 5100				8439	
1089- MAT1	8517	10.566		.3	2.6-4					
1090- MAT1	8610	1.0567		.30	.00031					
1091- MAT1	8400	1.0567		.30	.000052					
1092- MAT1	8500	1.0567		.30						
1093- MAT1	8600	1.0567		.30	.00031					
1094- MPC	701	8140	1	1.0	8134	3		-1.0		
1095- MPC	701	8140	3	1.0	8134	1		.197328	CM81407	
1096- CM8140Z		8134	2		-.980338					
1097- MPC	701	8210	1	1.0	8209	3		-1.0		
1098- MPC	701	8299	1	1.0	8294	3		-1.0		
1099- MPC	701	8299	3	1.0	8294	2		1.0		
1100- MPC	701	8341	1	1.0	8336	3		-1.0		

OCTOBER 11, 1973 NASTRAN . 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES X0-HARMONIC

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1101- MPC	701	8341	3	1.0	8336	2	1.0			
1102- MPC	701	8359	1	1.0	8352	1	-1.0			
1103- MPC	701	8359	3	1.0	8352	2	.197328			EM8359Z
1104- EM8359Z		8352	3	-.980338						
1105- MPC	701	8360	1	1.0	8355	1	-1.0			
1106- MPC	701	8360	3	1.0	8355	2	.197328			EM8360Z
1107- EM8360Z		8355	3	-.980338						
1108- MPC	702	8210	6	1.0	8209	2	.4638			EM8210MZ
1109- EM8210MZ		8210	2	.4638						
1110- OMIT1	0	1005009	1005010	1005011	1005022	1005023	1005024			
1111- OMIT1	0	1005035	1005036	1005037	1005048	1005049	1005050			
1112- OMIT1	0	1005061	1005062	1005063	1005074	1005075	1005076			
1113- OMIT1	0	1005087	1005088	1005089	1005100	1005101	1005102			
1114- OMIT1	0	1005113	1005114	1005115	1005126	1005127	1005128			
1115- OMIT1	0	1005139	1005140	1005141	1005152	1005153	1005165			
1116- OMIT1	0	1008179	1008180	1008199	1008200	1008219	1008220			
1117- OMIT1	0	1008239	1008240	1008259	1008260	1008279	1008280			
1118- OMIT1	0	1008300	1008301	1008319	1008320	1008342	1008343			
1119- OMIT1	0	1008379	1008380	1008399	1008400	1008419				
1120- OMIT1	1	8335								
1121- OMIT1	2	5121	5147	5160	5173	5186	5199	8075		COM21
1122- COM21	8374	8414	8434							
1123- OMIT1	2	5145	5149							
1124- OMIT1	3	5013	5021	5039	5047	5065	5073	5091		COM31
1125- COM31	5099	8170	8178	8210	8218	8230	8238	8250		COM32
1126- COM32	8258	8270	8278	8298	8330	8340				
1127- OMIT1	5	5013	5021	5039	5047	5065	5073			
1128- OMIT1	5	5091	5099	5117	5125	5143	5151			
1129- OMIT1	5	5156	5164	5169	5177	5182	5190			
1130- OMIT1	5	5195	5203							
1131- OMIT1	5	8070	8079	8130	8139	8170	8178			
1132- OMIT1	5	8210	8218	8230	8238	8250	8258			
1133- OMIT1	5	8270	8278	8290	8298	8330	8340			
1134- OMIT1	5	8370	8378	8350	8358	8390	8398			
1135- OMIT1	5	8410	8418	8430	8438					
1136- OMIT1	12	5158	5162	5171	5175	5184	5188			
1137- OMIT1	12	5197	5201							
1138- OMIT1	12	8331	8334							
1139- OMIT1	12	8412	8416	8432	8436					
1140- OMIT1	13	8130	8139	8350	8352	8358				
1141- OMIT1	23	5017	5043	5069	5095	8174	8214	8234		COM231
1142- COM231	8254	8274	8294	8336						
1143- OMIT1	23	5067	5071	5093	5097	5119	5123			
1144- OMIT1	23	8212	8216	8232	8236	8252				
1145- OMIT1	23	8256	8272	8276	8292	8296	8333	8338		
1146- OMIT1	35	5078	5086							
1147- OMIT1	123	5015	5019	5041	5045	8072	8077	8132		
1148- OMIT1	123	8135	8137	8172	8176					
1149- OMIT1	123	8354	8356	8372	8376	8392	8396			
1150- OMIT1	135	5001	5204	5026	5034	5052	5060			

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HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, UNIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
1151-OMIT1	135	5104	5112	5130	5138					
1152-OMIT1	135	8001	8010	8018	8030	8038	8050	8058		
1153-OMIT1	135	8110	8119	8150	8159	8190	8198			
1154-OMIT1	135	8310	8318	8440						
1155-OMIT1	456	5015	5017	5019	5041	5043	5045			
1156-OMIT1	456	5067	5069	5071	5093	5095	5097			
1157-OMIT1	456	5119	5121	5123	5145	5147	5149			
1158-OMIT1	456	5158	5160	5162	5171	5173	5175			
1159-OMIT1	456	5184	5186	5188	5197	5199	5201			
1160-OMIT1	456	8072	8075	8077	8132	8134	8135	8137		
1161-OMIT1	456	8172	8174	8176	8212	8214	8216			
1162-OMIT1	456	8232	8234	8236	8252	8254	8256			
1163-OMIT1	456	8272	8274	8276	8292	8294	8296			
1164-OMIT1	456	8333	8336	8338	8372	8374	8376			
1165-OMIT1	456	8352	8354	8355	8356	8392	8394	8396		
1166-OMIT1	456	8412	8414	8416	8432	8434	8436			
1167-OMIT1	3456	8331	8334							
1168-OMIT1	12456	5183	5185	5187	5189					
1169-OMIT1	23456	5080	5082	5084						
1170-OMIT1	23456	5092	5094	5096	5098					
1171-OMIT1	123456	5014	5016	5018	5020					
1172-OMIT1	123456	5027	THRU	5033						
1173-OMIT1	123456	5040	5042	5044	5046					
1174-OMIT1	123456	5053	THRU	5059						
1175-OMIT1	123456	5066	5068	5070	5072					
1176-OMIT1	123456	5079	5081	5083	5085					
1177-OMIT1	123456	5105	THRU	5111						
1178-OMIT1	123456	5118	5120	5122	5124					
1179-OMIT1	123456	5126	8131	8133	8136	8138				
1180-OMIT1	123456	5131	THRU	5137						
1181-OMIT1	123456	5144	5146	5148	5150					
1182-OMIT1	123456	5157	5159	5161	5163					
1183-OMIT1	123456	5170	5172	5174	5176					
1184-OMIT1	123456	5196	5198	5200	5202					
1185-OMIT1	123456	8011	THRU	8017						
1186-OMIT1	123456	8031	THRU	8037						
1187-OMIT1	123456	8051	THRU	8057						
1188-OMIT1	123456	8071	8073	8074	8076	8078				
1189-OMIT1	123456	8111	THRU	8116						
1190-OMIT1	123456	8151	THRU	8158						
1191-OMIT1	123456	8171	8173	8175	8177					
1192-OMIT1	123456	8191	THRU	8197						
1193-OMIT1	123456	8211	8213	8215	8217					
1194-OMIT1	123456	8231	8233	8235	8237					
1195-OMIT1	123456	8271	8273	8275	8277					
1196-OMIT1	123456	8291	8293	8295	8297					
1197-OMIT1	123456	8332	8335	8337	8339					
1198-OMIT1	123456	8351	8353	8357						
1199-OMIT1	123456	8371	8373	8375	8377					
1200-OMIT1	123456	8391	8393	8395	8397					

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HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC

S O R T E D B U L K D A T A E C H U											
CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1201- OMIT1	123456	8411	8413	8415	8417						
1202- OMIT1	123456	8431	8433	8435	8437						
1203- PBAR	5517	5517	.63	.349	.037	.0103	.0				
1204- PBAR	8400	8400	.242	.0260	.0180		.0000613				
1205- PBAR	8410	8400	.054	.0028	.0025		.000014				
1206- PBAK	8420	8400	.324	.0126	.3680		.0000779				
1207- PBAK	8430	8400	.162	.0063	.184		.0000388				
1208- PBAK	8440	8400	.484	.0513	.0250		.0001227				
1209- PBAK	8450	8400	.054	.0028	.0025		.000014				
1210- PBAK	8460	8400	.054	.0028	.0025		.000014				
1211- PBAK	8470	8400	.324	.0126	.3680		.0000779				
1212- PBAK	8480	8400	.054	.0028	.0025		.000014				
1213- PBAK	8490	8400	.054	.0028	.0025		.000014				
1214- PBAK	8500	8400	.054	.0028	.0025		.000014				
1215- PBAK	8510	8400	.324	.0126	.3680		.0000779				
1216- PBAK	8520	8400	.054	.0028	.0025		.000014				
1217- PBAK	8530	8400	.324	.0126	.3680		.0000779				
1218- PBAK	8531	8400	.324	.0126	.3680		.0000779				
1219- PBAK	8540	8400	.484	.0513	.0250		.0001227				
1220- PBAK	8550	8400	.324	.0126	.3680		.0000779				
1221- PQUAD2	5009	5517	.020	.0	5073	5517	.016				
1222- PQUAD2	5113	5517	.040	.0							
1223- PQUAD2	8010	8010	.020								
1224- PQUAD2	8011	8010	.020								
1225- PQUAD2	8072	8010	.055								
1226- PQUAD2	8092	8010	.048								
1227- PQUAD2	8112	8010	.040								
1228- PQUAD2	8150	8010	.025								
1229- PQUAD2	8151	8010	.025								
1230- PQUAD2	8153	8010	.057								
1231- PQUAD2	8190	8010	.016								
1232- PQUAD2	8230	8010	.021								
1233- PQUAD2	8230	8010	.022								
1234- PTR1A2	5099	5517	.025	.0							
1235- PTR1A2	5113	5517	.04	.0							
1236- PTR1A2	8000	8010	.020								
1237- PTR1A2	8001	8010	.020								
1238- RINGFL	5009	2.4		23.0	5010	4.45			23.0		
1239- RINGFL	5011	6.65		23.0	5012	9.0			23.0		
1240- RINGFL	5022	5.0		31.93	5023	7.75			31.93		
1241- RINGFL	5024	10.75		31.93	5025	14.2			31.93		
1242- RINGFL	5035	5.0		40.38	5036	9.2			40.38		
1243- RINGFL	5037	12.5		40.38	5038	16.2			40.38		
1244- RINGFL	5042	5.0		48.38	5049	10.0			48.38		
1245- RINGFL	5050	13.7		48.38	5051	18.0			48.38		
1246- RINGFL	5061	5.0		56.28	5062	10.0			56.28		
1247- RINGFL	5063	15.0		56.28	5064	19.875			56.28		
1248- RINGFL	5074	5.0		65.78	5075	10.0			65.78		
1249- RINGFL	5076	15.0		65.78	5077	19.875			65.78		
1250- RINGFL	5087	5.0		71.78	5088	10.0			71.78		



OCTOBER 11, 1973 NASTRAN 2/ 1/73  
HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES %0-HARMONIC#

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	2	3	4	5	6	7	8	9	10
1251- RINGFL	5089	15.0			71.78	5090	19.875		71.78	
1252- RINGFL	5100	5.0			77.28	5101	10.0		77.28	
1253- RINGFL	5102	15.0			77.28	5103	19.875		77.28	
1254- RINGFL	5113	5.0			83.78	5114	10.0		83.78	
1255- RINGFL	5115	15.0			83.78	5116	19.8		83.78	
1256- RINGFL	5126	5.0			87.93	5127	10.0		87.93	
1257- RINGFL	5128	15.0			87.93	5129	18.54		87.93	
1258- RINGFL	5139	5.0			91.28	5140	10.0		91.28	
1259- RINGFL	5141	13.6			91.28	5142	16.28		91.28	
1260- RINGFL	5152	5.0			94.53	5153	9.0		94.53	
1261- RINGFL	5154	12.29			94.53	5165	5.0		96.083	
1262- RINGFL	5166	9.274			96.083	5178	1.785		97.912	
1263- RINGFL	5179	5.266			97.386					
1264- RINGFL	8179	6.4			128.35	8180	12.61		128.35	
1265- RINGFL	8181	19.8			128.35	8199	6.4		139.06	
1266- RINGFL	8200	12.61			139.06	8201	19.8		139.06	
1267- RINGFL	8219	6.4			148.756	8220	12.61		148.756	
1268- RINGFL	8221	19.8			148.756	8239	6.4		168.75	
1269- RINGFL	8240	12.61			168.75	8241	19.8		168.75	
1270- RINGFL	8259	6.4			188.75	8260	12.61		188.75	
1271- RINGFL	8261	19.8			188.75	8279	6.4		209.13	
1272- RINGFL	8260	12.61			209.13	8281	19.8		209.13	
1273- RINGFL	8300	6.4			229.156	8301	12.61		229.156	
1274- RINGFL	8302	19.8			229.156	8319	6.4		237.3	
1275- RINGFL	8320	12.61			237.3	8321	19.8		237.3	
1276- RINGFL	8342	6.4			245.75368	8343	12.61		245.7536	
1277- RINGFL	8344	19.8			245.75368	8379	6.4		259.125	
1278- RINGFL	8380	12.61			258.125	8381	19.8		258.125	
1279- RINGFL	8399	6.4			260.92	8400	12.61		260.92	
1280- RINGFL	8401	17.91			260.92	8419	6.4		265.98	
1281- RINGFL	8420	12.61			265.98	8439	6.4		268.75	
1282- SPC1	101	2	8140	8299	8328	8341	8359	8360		
1283- SPC1	101	2	8209							
1284- SPC1	101	246	5001	5013	5021	5026	5034	5039		
1285- SPC1	101	246	5047	5052	5060	5065	5073	5078		
1286- SPC1	101	246	5086	5091	5099	5104	5112	5117		
1287- SPC1	101	246	5117	5125	8001	8010	8018	8030		
1288- SPC1	101	246	5125	5130	5138	5143	5151	5156		
1289- SPC1	101	246	5164	5169	5177	5182	5190	5195		
1290- SPC1	101	246	5203	5204						
1291- SPC1	101	246	8038	8050	8058	8070	8079	8110		
1292- SPC1	101	246	8119	8130	8139	8150	8159	8170		
1293- SPC1	101	246	8178	8190	8198	8210	8218	8230		
1294- SPC1	101	246	8238	8250	8258	8270	8278	8290		
1295- SPC1	101	246	8298	8310	8318	8330	8340	8350		
1296- SPC1	101	246	8358	8370	8378	8390	8398	8410		
1297- SPC1	101	246	8418	8430	8438	8440				
ENDDATA										

OCTOBER 11, 1973 NASTRAN 2/ 1/73  
 HYDROELASTIC ANALYSIS OF 1/8 MODEL TANKS  
 180 DEGREE SYMMETRY SYMM CASE, OMIT INTERIOR FLUIDS

FREE-FREE MODES XC-HARMONIC

LIST OF MODIFIED CARDS

MASK WORD - BIT POSITION - CARD NAME - PACKED BIT POSITION

1			
2			
3			
	23	FIGR	
	30	OMIT1	11
4			
5			
6			
	26	PBAR	3
7			
8			
9			
10			
11			
	4	METHOD\$	
	15	PLOT\$	18
	17	POUT\$	19
	23	CMETHOD\$	62
	31	NOLOOP\$	25

**Appendix C2**  
**CYLINDRICAL FLUID – CALCULATION OF MASS**  
**MATRIX, PRESSURE AND SURFACE DISPLACEMENT**  
**RECOVERY MATRICES – HARMONICS**  
 **$n = 0, 2, 4$**

APRIL 9, 1974 NASTRAN 2/ 1/73

N A S T R A N E X E C U T I V E C O N T R O L D E C K E C H O

```
ID HYDRO,COPPOLINO
APP DISP
SOL 7.0
TIME 5
CHKPNT YES
DIAG 7,8,13,14,19,21,22
ALTER 50
MATGPR GPL,USET,SIL,MGG//C,N,G
MATGPR GPL,USET,SIL,KGG//C,N,G
ALTER 73
MATGPR GPL,USET,SIL,MFF//C,N,F
MATGPR GPL,USET,SIL,KFF//C,N,F
ALTER 101
MATGPR GPL,USET,SIL,ABFL//C,N,P
MATGPR GPL,USET,SIL,KBFL//C,N,P
ALTER 136
MATGPR GPLD,USED,SILD,MDD//C,N,D
MATGPR GPLD,USED,SILD,KDD//C,N,D
SEEMAT MGG,KGG,MFF,KFF,ABFL//C,N,PRINT
SEEMAT KBFL,MDD,KDD,.,./C,N,PRINT
PARTN KDD,P9./KBP,AEM.,KE/C,N,-1 $
PARTN KBP,G9./K11,K21,K12,K22/C,N,-1 $
PARTN AEM,G9,UP/A1M,...A2M/C,N,1 $
PARTN KE,UP./KE1,...KE2/C,N,-1 $
TRNSP A2M/A2MT $
SOLVE K22,A2MT/PDU2/C,N,1/C,N,-1 $
SOLVE A1M,K12/M2L/C,N,1 $
MPYAD M2L,PDU2./TU12/C,N,0/C,N,-1 $
ADD PDU2./PDU3/C,Y,A999#X1.0.0.0# $
PARAM //C,N,NOP/V,N.TRUE#-1 $
EQUIV PDU3,PDU2/TRUE $
COND PDUN09,TRUE $
MATPRN PDU3,.,.,./ $
LABEL PDUN09 $
MPYAD A2M,PDU2./MFLD/C,N,0/C,N,-1 $
OUTPUT3 MFLD,PDU2,TU12,./C,N,0/C,Y,N1#AMF/C,Y,N2#APD/C,Y,N3#ATU $
SMPLYAD TU12,KE1,TU12,.,KE2/KEB/C,N,3/C,N,1/C,N,1/C,N,2/C,N,1 $
SOLVE K22,K21/CP2/C,N,1/C,N,-1 $
MATPRN K11,K12,K22,./ $
MATPRN A1M,A2M,KE1,./ $
MATPRN PDU2,MFLD,TU12,./ $
MATPRN KEB,K11,CP2,./ $
EXIT
ENDALTER
CEND
```

APRIL 9, 1974 NASTRAN 2/ 1/73

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM

RESTART   HYDRO   .COPPOLIN, 4/ 9/74,   48911.

CYLINDRICAL FLUID

APRIL 9, 1974 NASTRAN 2/ 1/73

CASE CONTROL DECK ECHO

CARD COUNT	
1	TITLE#CYLINDRICAL FLUID
2	AXISYM#FLUID
3	MPC#1
4	CMETHOD#1
5	OUTPUT
6	DISP#ALL
7	HARMONICS#ALL
8	BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED. XSORT WILL RE-ORDER DECK.

## SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	AXIF 1	0.0	1.			NO				EAX
2-	EAX 0	2	4							
3-	BDYLIST	AXIS	1	2	3	4	5	10		E8D1
4-	E8D1 15	20	25	30	35	40	45	50		E8D2
5-	E8D2 55									
6-	CFLUID2 1	1	6							
7-	CFLUID2 6	6	11							
8-	CFLUID2 11	11	16							
9-	CFLUID2 16	16	21							
10-	CFLUID2 21	21	26							
11-	CFLUID2 26	26	31							
12-	CFLUID2 31	31	36							
13-	CFLUID2 36	36	41							
14-	CFLUID2 41	41	46							
15-	CFLUID2 46	46	51							
16-	CFLUID4 2	1	2	7	6					
17-	CFLUID4 3	2	3	8	7					
18-	CFLUID4 4	3	4	9	8					
19-	CFLUID4 5	4	5	10	9					
20-	CFLUID4 7	6	7	12	11					
21-	CFLUID4 8	7	8	13	12					
22-	CFLUID4 9	8	9	14	13					
23-	CFLUID4 10	9	10	15	14					
24-	CFLUID4 12	11	12	17	16					
25-	CFLUID4 13	12	13	18	17					
26-	CFLUID4 14	13	14	19	18					
27-	CFLUID4 15	14	15	20	19					
28-	CFLUID4 17	16	17	22	21					
29-	CFLUID4 18	17	18	23	22					
30-	CFLUID4 19	18	19	24	23					
31-	CFLUID4 20	19	20	25	24					
32-	CFLUID4 22	21	22	27	26					
33-	CFLUID4 23	22	23	28	27					
34-	CFLUID4 24	23	24	29	28					
35-	CFLUID4 25	24	25	30	29					
36-	CFLUID4 27	26	27	32	31					
37-	CFLUID4 28	27	28	33	32					
38-	CFLUID4 29	28	29	34	33					
39-	CFLUID4 30	29	30	35	34					
40-	CFLUID4 32	31	32	37	36					
41-	CFLUID4 33	32	33	38	37					
42-	CFLUID4 34	33	34	39	38					
43-	CFLUID4 35	34	35	40	39					
44-	CFLUID4 37	36	37	42	41					
45-	CFLUID4 38	37	38	43	42					
46-	CFLUID4 39	38	39	44	43					
47-	CFLUID4 40	39	40	45	44					
48-	CFLUID4 42	41	42	47	46					
49-	CFLUID4 43	42	43	48	47					
50-	CFLUID4 44	43	44	49	48					

## SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CFLUID4	45	44	45	50	49				
52-	CFLUID4	47	46	47	52	51				
53-	CFLUID4	48	47	48	53	52				
54-	CFLUID4	49	48	49	54	53				
55-	CFLUID4	50	49	50	55	54				
56-	CORD2C	1		0.0	0.0	0.0	0.0	0.0	1.	ECOC
57-	ECOC	1.	0.	0.						
58-	DMI	G9	0	2	1	2		45	1	
59-	DMI	G9	1	16	1.	1.	1.	1.	1.	EPP1
60-	EPP1	1.	1.	1.	1.	1.	1.	1.	1.	EPP2
61-	EPP2	1.	1.	1.	1.	1.	1.	1.	1.	EPP3
62-	EPP3	1.	1.	1.	1.	1.	1.	1.	1.	EPP4
63-	EPP4	1.								
64-	DMI	P9	0	2	1	2		90	1	
65-	DMI	P9	1	46	1.	1.	1.	1.	1.	EPUE1
66-	EPUE1	1.	1.	1.	1.	1.	1.	1.	1.	EPUE2
67-	EPUE2	1.	1.	1.	1.	1.	1.	1.	1.	EPUE3
68-	EPUE3	1.	1.	1.	1.	1.	1.	1.	1.	EPUE4
69-	EPUE4	1.	1.	1.	1.	1.	1.	1.	1.	EPUE5
70-	EPUE5	1.	1.	1.	1.	1.	1.	1.	1.	
71-	DMI	UP	0	2	1	2		45	1	
72-	DMI	UP	1	16	1.	1.	1.	1.	1.	EUP1
73-	EUP1	1.	1.	1.	1.	1.	1.	1.	1.	EUP2
74-	EUP2	1.	1.	1.	1.	1.	1.	1.	1.	EUP3
75-	EUP3	1.	1.	1.	1.	1.	1.	1.	1.	EUP4
76-	EUP4	1.								
77-	EIGC	1	DET	MAX						EI
78-	EI	0.	0.	0.	500.	.001	10	10		
79-	FLSYM	4	S	S						
80-	GRID	100600	1	1.	0.0	0.0	1	12456		
81-	GRID	100602	1	1.	0.0	0.0	1	12456		
82-	GRID	100604	1	1.	0.0	0.0	1	12456		
83-	GRID	100700	1	1.	0.0	0.0	1	12456		
84-	GRID	100702	1	1.	0.0	0.0	1	12456		
85-	GRID	100704	1	1.	0.0	0.0	1	12456		
86-	GRID	100800	1	1.	0.0	0.0	1	12456		
87-	GRID	100802	1	1.	0.0	0.0	1	12456		
88-	GRID	100804	1	1.	0.0	0.0	1	12456		
89-	GRID	100900	1	1.	0.0	0.0	1	12456		
90-	GRID	100902	1	1.	0.0	0.0	1	12456		
91-	GRID	100904	1	1.	0.0	0.0	1	12456		
92-	GRID	101000	1	1.	0.0	0.0	1	12456		
93-	GRID	101002	1	1.	0.0	0.0	1	12456		
94-	GRID	101004	1	1.	0.0	0.0	1	12456		
95-	GRID	102000	1	1.	0.0	0.0	1	23456		
96-	GRID	102002	1	1.	0.0	0.0	1	23456		
97-	GRID	102004	1	1.	0.0	0.0	1	23456		
98-	GRID	103000	1	1.	0.0	0.0	1	23456		
99-	GRID	103002	1	1.	0.0	0.0	1	23456		
100-	GRID	103004	1	1.	0.0	0.0	1	23456		



CARD		SORTED BULK DATA ECHO															
COUNT		1	2	3	4	5	6	7	8								
101-	GRID	104000	1	1.	0.0	0.0	1	23456									
102-	GRID	104002	1	1.	0.0	0.0	1	23456									
103-	GRID	104004	1	1.	0.0	0.0	1	23456									
104-	GRID	105000	1	1.	0.0	0.0	1	23456									
105-	GRID	105002	1	1.	0.0	0.0	1	23456									
106-	GRID	105004	1	1.	0.0	0.0	1	23456									
107-	GRID	106000	1	1.	0.0	0.0	1	23456									
108-	GRID	106002	1	1.	0.0	0.0	1	23456									
109-	GRID	106004	1	1.	0.0	0.0	1	23456									
110-	GRID	107000	1	1.	0.0	0.0	1	23456									
111-	GRID	107002	1	1.	0.0	0.0	1	23456									
112-	GRID	107004	1	1.	0.0	0.0	1	23456									
113-	GRID	108000	1	1.	0.0	0.0	1	23456									
114-	GRID	108002	1	1.	0.0	0.0	1	23456									
115-	GRID	108004	1	1.	0.0	0.0	1	23456									
116-	GRID	109000	1	1.	0.0	0.0	1	23456									
117-	GRID	109002	1	1.	0.0	0.0	1	23456									
118-	GRID	109004	1	1.	0.0	0.0	1	23456									
119-	GRID	110000	1	1.	0.0	0.0	1	23456									
120-	GRID	110002	1	1.	0.0	0.0	1	23456									
121-	GRID	110004	1	1.	0.0	0.0	1	23456									
122-	GRID	111000	1	1.	0.0	0.0	1	23456									
123-	GRID	111002	1	1.	0.0	0.0	1	23456									
124-	GRID	111004	1	1.	0.0	0.0	1	23456									
125-	GRIDB	601			0.0		1	12456	1								
126-	GRIDB	602			9.		1	12456	1								
127-	GRIDB	603			18.		1	12456	1								
128-	GRIDB	604			27.		1	12456	1								
129-	GRIDB	605			36.		1	12456	1								
130-	GRIDB	606			45.		1	12456	1								
131-	GRIDB	607			54.		1	12456	1								
132-	GRIDB	608			63.		1	12456	1								
133-	GRIDB	609			72.		1	12456	1								
134-	GRIDB	610			81.		1	12456	1								
135-	GRIDB	611			90.		1	12456	1								
136-	GRIDB	701			0.0		1	12456	2								
137-	GRIDB	702			9.		1	12456	2								
138-	GRIDB	703			18.		1	12456	2								
139-	GRIDB	704			27.		1	12456	2								
140-	GRIDB	705			36.		1	12456	2								
141-	GRIDB	706			45.		1	12456	2								
142-	GRIDB	707			54.		1	12456	2								
143-	GRIDB	708			63.		1	12456	2								
144-	GRIDB	709			72.		1	12456	2								
145-	GRIDB	710			81.		1	12456	2								
146-	GRIDB	711			90.		1	12456	2								
147-	GRIDB	801			0.0		1	12456	3								
148-	GRIDB	802			9.		1	12456	3								
149-	GRIDB	803			18.		1	12456	3								
150-	GRIDB	804			27.		1	12456	3								

		S O R T E D   B U L K   D A T A   E C H O															
CARD COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..
151-	GRIDB	805								36.			1			12456	3
152-	GRIDB	806								45.			1			12456	3
153-	GRIDB	807								54.			1			12456	3
154-	GRIDB	808								63.			1			12456	3
155-	GRIDB	809								72.			1			12456	3
156-	GRIDB	810								81.			1			12456	3
157-	GRIDB	811								90.			1			12456	3
158-	GRIDB	901								0.0			1			12456	4
159-	GRIDB	902								9.			1			12456	4
160-	GRIDB	903								18.			1			12456	4
161-	GRIDB	904								27.			1			12456	4
162-	GRIDB	905								36.			1			12456	4
163-	GRIDB	906								45.			1			12456	4
164-	GRIDB	907								54.			1			12456	4
165-	GRIDB	908								63.			1			12456	4
166-	GRIDB	909								72.			1			12456	4
167-	GRIDB	910								81.			1			12456	4
168-	GRIDB	911								90.			1			12456	4
169-	GRIDB	1001								0.0			1			12456	5
170-	GRIDB	1002								9.			1			12456	5
171-	GRIDB	1003								18.			1			12456	5
172-	GRIDB	1004								27.			1			12456	5
173-	GRIDB	1005								36.			1			12456	5
174-	GRIDB	1006								45.			1			12456	5
175-	GRIDB	1007								54.			1			12456	5
176-	GRIDB	1008								63.			1			12456	5
177-	GRIDB	1009								72.			1			12456	5
178-	GRIDB	1010								81.			1			12456	5
179-	GRIDB	1011								90.			1			12456	5
180-	GRIDB	2001								0.0			1			23456	10
181-	GRIDB	2002								9.			1			23456	10
182-	GRIDB	2003								18.			1			23456	10
183-	GRIDB	2004								27.			1			23456	10
184-	GRIDB	2005								36.			1			23456	10
185-	GRIDB	2006								45.			1			23456	10
186-	GRIDB	2007								54.			1			23456	10
187-	GRIDB	2008								63.			1			23456	10
188-	GRIDB	2009								72.			1			23456	10
189-	GRIDB	2010								81.			1			23456	10
190-	GRIDB	2011								90.			1			23456	10
191-	GRIDB	3001								0.0			1			23456	15
192-	GRIDB	3002								9.			1			23456	15
193-	GRIDB	3003								18.			1			23456	15
194-	GRIDB	3004								27.			1			23456	15
195-	GRIDB	3005								36.			1			23456	15
196-	GRIDB	3006								45.			1			23456	15
197-	GRIDB	3007								54.			1			23456	15
198-	GRIDB	3008								63.			1			23456	15
199-	GRIDB	3009								72.			1			23456	15
200-	GRIDB	3010								81.			1			23456	15

S O R T E D B U L K D A T A E C H O											
CARD COUNT	1	2	3	4	5	6	7	8			
201-	GRIDB	3011			90.		1	23456	15		
202-	GRIDB	4001			0.0		1	23456	20		
203-	GRIDB	4002			9.		1	23456	20		
204-	GRIDB	4003			18.		1	23456	20		
205-	GRIDB	4004			27.		1	23456	20		
206-	GRIDB	4005			36.		1	23456	20		
207-	GRIDB	4006			45.		1	23456	20		
208-	GRIDB	4007			54.		1	23456	20		
209-	GRIDB	4008			63.		1	23456	20		
210-	GRIDB	4009			72.		1	23456	20		
211-	GRIDB	4010			81.		1	23456	20		
212-	GRIDB	4011			90.		1	23456	20		
213-	GRIDB	5001			0.0		1	23456	25		
214-	GRIDB	5002			9.		1	23456	25		
215-	GRIDB	5003			18.		1	23456	25		
216-	GRIDB	5004			27.		1	23456	25		
217-	GRIDB	5005			36.		1	23456	25		
218-	GRIDB	5006			45.		1	23456	25		
219-	GRIDB	5007			54.		1	23456	25		
220-	GRIDB	5008			63.		1	23456	25		
221-	GRIDB	5009			72.		1	23456	25		
222-	GRIDB	5010			81.		1	23456	25		
223-	GRIDB	5011			90.		1	23456	25		
224-	GRIDB	6001			0.0		1	23456	30		
225-	GRIDB	6002			9.		1	23456	30		
226-	GRIDB	6003			18.		1	23456	30		
227-	GRIDB	6004			27.		1	23456	30		
228-	GRIDB	6005			36.		1	23456	30		
229-	GRIDB	6006			45.		1	23456	30		
230-	GRIDB	6007			54.		1	23456	30		
231-	GRIDB	6008			63.		1	23456	30		
232-	GRIDB	6009			72.		1	23456	30		
233-	GRIDB	6010			81.		1	23456	30		
234-	GRIDB	6011			90.		1	23456	30		
235-	GRIDB	7001			0.0		1	23456	35		
236-	GRIDB	7002			9.		1	23456	35		
237-	GRIDB	7003			18.		1	23456	35		
238-	GRIDB	7004			27.		1	23456	35		
239-	GRIDB	7005			36.		1	23456	35		
240-	GRIDB	7006			45.		1	23456	35		
241-	GRIDB	7007			54.		1	23456	35		
242-	GRIDB	7008			63.		1	23456	35		
243-	GRIDB	7009			72.		1	23456	35		
244-	GRIDB	7010			81.		1	23456	35		
245-	GRIDB	7011			90.		1	23456	35		
246-	GRIDB	8001			0.0		1	23456	40		
247-	GRIDB	8002			9.		1	23456	40		
248-	GRIDB	8003			18.		1	23456	40		
249-	GRIDB	8004			27.		1	23456	40		
250-	GRIDB	8005			36.		1	23456	40		

SORTED BULK DATA ECHO																
CARD	1	2	3	4	5	6	7	8	9	10						
COUNT	1	2	3	4	5	6	7	8	9	10						
251- GRIDB	8006				45.		1	23456	40							
252- GRIDB	8007				54.		1	23456	40							
253- GRIDB	8008				63.		1	23456	40							
254- GRIDB	8009				72.		1	23456	40							
255- GRIDB	8010				81.		1	23456	40							
256- GRIDB	8011				90.		1	23456	40							
257- GRIDB	9001				0.0		1	23456	45							
258- GRIDB	9002				9.		1	23456	45							
259- GRIDB	9003				18.		1	23456	45							
260- GRIDB	9004				27.		1	23456	45							
261- GRIDB	9005				36.		1	23456	45							
262- GRIDB	9006				45.		1	23456	45							
263- GRIDB	9007				54.		1	23456	45							
264- GRIDB	9008				63.		1	23456	45							
265- GRIDB	9009				72.		1	23456	45							
266- GRIDB	9010				81.		1	23456	45							
267- GRIDB	9011				90.		1	23456	45							
268- GRIDB	10001				0.0		1	23456	50							
269- GRIDB	10002				9.		1	23456	50							
270- GRIDB	10003				18.		1	23456	50							
271- GRIDB	10004				27.		1	23456	50							
272- GRIDB	10005				36.		1	23456	50							
273- GRIDB	10006				45.		1	23456	50							
274- GRIDB	10007				54.		1	23456	50							
275- GRIDB	10008				63.		1	23456	50							
276- GRIDB	10009				72.		1	23456	50							
277- GRIDB	10010				81.		1	23456	50							
278- GRIDB	10011				90.		1	23456	50							
279- GRIDB	11001				0.0		1	23456	55							
280- GRIDB	11002				9.		1	23456	55							
281- GRIDB	11003				18.		1	23456	55							
282- GRIDB	11004				27.		1	23456	55							
283- GRIDB	11005				36.		1	23456	55							
284- GRIDB	11006				45.		1	23456	55							
285- GRIDB	11007				54.		1	23456	55							
286- GRIDB	11008				63.		1	23456	55							
287- GRIDB	11009				72.		1	23456	55							
288- GRIDB	11010				81.		1	23456	55							
289- GRIDB	11011				90.		1	23456	55							
290- MPC	1	601	3		-1.	100600	3	1.		EM00601						
291- EM00601		100602	3		1.	100604	3	1.								
292- MPC	1	602	3		-1.	100600	3	1.		EM00602						
293- EM00602		100602	3		.9511	100604	3	.8090								
294- MPC	1	603	3		-1.	100600	3	1.		EM00603						
295- EM00603		100602	3		.8090	100604	3	.3090								
296- MPC	1	604	3		-1.	100600	3	1.		EM00604						
297- EM00604		100602	3		.5878	100604	3	-.3090								
298- MPC	1	605	3		-1.	100600	3	1.		EM00605						
299- EM00605		100602	3		.3090	100604	3	-.8090								
300- MPC	1	606	3		-1.	100600	3	1.		EM00606						

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
301- EM00606			100602	3		0.	100604	3	-1.		
302- MPC	1		607	3		-1.	100600	3	1.		EM00607
303- EM00607			100602	3		-.3090	100604	3	-.8090		
304- MPC	1		608	3		-1.	100600	3	1.		EM00608
305- EM00608			100602	3		-.5878	100604	3	-.3090		
306- MPC	1		609	3		-1.	100600	3	1.		EM00609
307- EM00609			100602	3		-.8090	100604	3	.3090		
308- MPC	1		610	3		-1.	100600	3	1.		EM00610
309- EM00610			100602	3		-.9511	100604	3	.8090		
310- MPC	1		611	3		-1.	100600	3	1.		EM00611
311- EM00611			100602	3		-1.	100604	3	1.		
312- MPC	1		701	3		-1.	100700	3	1.		EM00701
313- EM00701			100702	3		1.	100704	3	1.		
314- MPC	1		702	3		-1.	100700	3	1.		EM00702
315- EM00702			100702	3		.9511	100704	3	.8090		
316- MPC	1		703	3		-1.	100700	3	1.		EM00703
317- EM00703			100702	3		.8090	100704	3	.3090		
318- MPC	1		704	3		-1.	100700	3	1.		EM00704
319- EM00704			100702	3		.5878	100704	3	-.3090		
320- MPC	1		705	3		-1.	100700	3	1.		EM00705
321- EM00705			100702	3		.3090	100704	3	-.8090		
322- MPC	1		706	3		-1.	100700	3	1.		EM00706
323- EM00706			100702	3		0.	100704	3	-1.		
324- MPC	1		707	3		-1.	100700	3	1.		EM00707
325- EM00707			100702	3		-.3090	100704	3	-.8090		
326- MPC	1		708	3		-1.	100700	3	1.		EM00708
327- EM00708			100702	3		-.5878	100704	3	-.3090		
328- MPC	1		709	3		-1.	100700	3	1.		EM00709
329- EM00709			100702	3		-.8090	100704	3	.3090		
330- MPC	1		710	3		-1.	100700	3	1.		EM00710
331- EM00710			100702	3		-.9511	100704	3	.8090		
332- MPC	1		711	3		-1.	100700	3	1.		EM00711
333- EM00711			100702	3		-1.	100704	3	1.		
334- MPC	1		801	3		-1.	100800	3	1.		EM00801
335- EM00801			100802	3		1.	100804	3	1.		
336- MPC	1		802	3		-1.	100800	3	1.		EM00802
337- EM00802			100802	3		.9511	100804	3	.8090		
338- MPC	1		803	3		-1.	100800	3	1.		EM00803
339- EM00803			100802	3		.8090	100804	3	.3090		
340- MPC	1		804	3		-1.	100800	3	1.		EM00804
341- EM00804			100802	3		.5878	100804	3	-.3090		
342- MPC	1		805	3		-1.	100800	3	1.		EM00805
343- EM00805			100802	3		.3090	100804	3	-.8090		
344- MPC	1		806	3		-1.	100800	3	1.		EM00806
345- EM00806			100802	3		0.	100804	3	-1.		
346- MPC	1		807	3		-1.	100800	3	1.		EM00807
347- EM00807			100802	3		-.3090	100804	3	-.8090		
348- MPC	1		808	3		-1.	100800	3	1.		EM00808
349- EM00808			100802	3		-.5878	100804	3	-.3090		
350- MPC	1		809	3		-1.	100800	3	1.		EM00809

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
351-EM00809			100802	3		-.8090	100804	3	.3090		
352-MPC	1		810	3		-1.	100800	3	1.		EM00810
353-EM00810			100802	3		-.9511	100804	3	.8090		
354-MPC	1		811	3		-1.	100800	3	1.		EM00811
355-EM00811			100802	3		-1.	100804	3	1.		
356-MPC	1		901	3		-1.	100900	3	1.		EM00901
357-EM00901			100902	3		1.	100904	3	1.		
358-MPC	1		902	3		-1.	100900	3	1.		EM00902
359-EM00902			100902	3		.9511	100904	3	.8090		
360-MPC	1		903	3		-1.	100900	3	1.		EM00903
361-EM00903			100902	3		.8090	100904	3	.3090		
362-MPC	1		904	3		-1.	100900	3	1.		EM00904
363-EM00904			100902	3		.5878	100904	3	-.3090		
364-MPC	1		905	3		-1.	100900	3	1.		EM00905
365-EM00905			100902	3		.3090	100904	3	-.8090		
366-MPC	1		906	3		-1.	100900	3	1.		EM00906
367-EM00906			100902	3		0.	100904	3	-1.		
368-MPC	1		907	3		-1.	100900	3	1.		EM00907
369-EM00907			100902	3		-.3090	100904	3	-.8090		
370-MPC	1		908	3		-1.	100900	3	1.		EM00908
371-EM00908			100902	3		-.5878	100904	3	-.3090		
372-MPC	1		909	3		-1.	100900	3	1.		EM00909
373-EM00909			100902	3		-.8090	100904	3	.3090		
374-MPC	1		910	3		-1.	100900	3	1.		EM00910
375-EM00910			100902	3		-.9511	100904	3	.8090		
376-MPC	1		911	3		-1.	100900	3	1.		EM00911
377-EM00911			100902	3		-1.	100904	3	1.		
378-MPC	1		1001	3		-1.	101000	3	1.		EM01001
379-EM01001			101002	3		1.	101004	3	1.		
380-MPC	1		1002	3		-1.	101000	3	1.		EM01002
381-EM01002			101002	3		.9511	101004	3	.8090		
382-MPC	1		1003	3		-1.	101000	3	1.		EM01003
383-EM01003			101002	3		.8090	101004	3	.3090		
384-MPC	1		1004	3		-1.	101000	3	1.		EM01004
385-EM01004			101002	3		.5878	101004	3	-.3090		
386-MPC	1		1005	3		-1.	101000	3	1.		EM01005
387-EM01005			101002	3		.3090	101004	3	-.8090		
388-MPC	1		1006	3		-1.	101000	3	1.		EM01006
389-EM01006			101002	3		0.	101004	3	-1.		
390-MPC	1		1007	3		-1.	101000	3	1.		EM01007
391-EM01007			101002	3		-.3090	101004	3	-.8090		
392-MPC	1		1008	3		-1.	101000	3	1.		EM01008
393-EM01008			101002	3		-.5878	101004	3	-.3090		
394-MPC	1		1009	3		-1.	101000	3	1.		EM01009
395-EM01009			101002	3		-.8090	101004	3	.3090		
396-MPC	1		1010	3		-1.	101000	3	1.		EM01010
397-EM01010			101002	3		-.9511	101004	3	.8090		
398-MPC	1		1011	3		-1.	101000	3	1.		EM01011
399-EM01011			101002	3		-1.	101004	3	1.		
400-MPC	1		2001	1		-1.	102000	1	1.		EM02001

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
401-EM02001			102002	1	1.	102004	1	1.			
402-MPC	1		2002	1	-1.	102000	1	1.		EM02002	
403-EM02002			102002	1	.9511	102004	1	.8090			
404-MPC	1		2003	1	-1.	102000	1	1.		EM02003	
405-EM02003			102002	1	.8090	102004	1	.3090			
406-MPC	1		2004	1	-1.	102000	1	1.		EM02004	
407-EM02004			102002	1	.5878	102004	1	-.3090			
408-MPC	1		2005	1	-1.	102000	1	1.		EM02005	
409-EM02005			102002	1	.3090	102004	1	-.8090			
410-MPC	1		2006	1	-1.	102000	1	1.		EM02006	
411-EM02006			102002	1	0.	102004	1	-1.			
412-MPC	1		2007	1	-1.	102000	1	1.		EM02007	
413-EM02007			102002	1	-.3090	102004	1	-.8090			
414-MPC	1		2008	1	-1.	102000	1	1.		EM02008	
415-EM02008			102002	1	-.5878	102004	1	-.3090			
416-MPC	1		2009	1	-1.	102000	1	1.		EM02009	
417-EM02009			102002	1	-.8090	102004	1	.3090			
418-MPC	1		2010	1	-1.	102000	1	1.		EM02010	
419-EM02010			102002	1	-.9511	102004	1	.8090			
420-MPC	1		2011	1	-1.	102000	1	1.		EM02011	
421-EM02011			102002	1	-1.	102004	1	1.			
422-MPC	1		3001	1	-1.	103000	1	1.		EM03001	
423-EM03001			103002	1	1.	103004	1	1.			
424-MPC	1		3002	1	-1.	103000	1	1.		EM03002	
425-EM03002			103002	1	.9511	103004	1	.8090			
426-MPC	1		3003	1	-1.	103000	1	1.		EM03003	
427-EM03003			103002	1	.8090	103004	1	.3090			
428-MPC	1		3004	1	-1.	103000	1	1.		EM03004	
429-EM03004			103002	1	.5878	103004	1	-.3090			
430-MPC	1		3005	1	-1.	103000	1	1.		EM03005	
431-EM03005			103002	1	.3090	103004	1	-.8090			
432-MPC	1		3006	1	-1.	103000	1	1.		EM03006	
433-EM03006			103002	1	0.	103004	1	-1.			
434-MPC	1		3007	1	-1.	103000	1	1.		EM03007	
435-EM03007			103002	1	-.3090	103004	1	-.8090			
436-MPC	1		3008	1	-1.	103000	1	1.		EM03008	
437-EM03008			103002	1	-.5878	103004	1	-.3090			
438-MPC	1		3009	1	-1.	103000	1	1.		EM03009	
439-EM03009			103002	1	-.8090	103004	1	.3090			
440-MPC	1		3010	1	-1.	103000	1	1.		EM03010	
441-EM03010			103002	1	-.9511	103004	1	.8090			
442-MPC	1		3011	1	-1.	103000	1	1.		EM03011	
443-EM03011			103002	1	-1.	103004	1	1.			
444-MPC	1		4001	1	-1.	104000	1	1.		EM04001	
445-EM04001			104002	1	1.	104004	1	1.			
446-MPC	1		4002	1	-1.	104000	1	1.		EM04002	
447-EM04002			104002	1	.9511	104004	1	.8090			
448-MPC	1		4003	1	-1.	104000	1	1.		EM04003	
449-EM04003			104002	1	.8090	104004	1	.3090			
450-MPC	1		4004	1	-1.	104000	1	1.		EM04004	

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
451-	EM04004			104002	1	.5878	104004	1	-.3090		
452-	MPC	1		4005	1	-1.	104000	1	1.		EM04005
453-	EM04005			104002	1	.3090	104004	1	-.8090		
454-	MPC	1		4006	1	-1.	104000	1	1.		EM04006
455-	EM04006			104002	1	0.	104004	1	-1.		
456-	MPC	1		4007	1	-1.	104000	1	1.		EM04007
457-	EM04007			104002	1	-.3090	104004	1	-.8090		
458-	MPC	1		4008	1	-1.	104000	1	1.		EM04008
459-	EM04008			104002	1	-.5878	104004	1	-.3090		
460-	MPC	1		4009	1	-1.	104000	1	1.		EM04009
461-	EM04009			104002	1	-.8090	104004	1	.3090		
462-	MPC	1		4010	1	-1.	104000	1	1.		EM04010
463-	EM04010			104002	1	-.9511	104004	1	.8090		
464-	MPC	1		4011	1	-1.	104000	1	1.		EM04011
465-	EM04011			104002	1	-1.	104004	1	1.		
466-	MPC	1		5001	1	-1.	105000	1	1.		EM05001
467-	EM05001			105002	1	1.	105004	1	1.		
468-	MPC	1		5002	1	-1.	105000	1	1.		EM05002
469-	EM05002			105002	1	.9511	105004	1	.8090		
470-	MPC	1		5003	1	-1.	105000	1	1.		EM05003
471-	EM05003			105002	1	.8090	105004	1	.3090		
472-	MPC	1		5004	1	-1.	105000	1	1.		EM05004
473-	EM05004			105002	1	.5878	105004	1	-.3090		
474-	MPC	1		5005	1	-1.	105000	1	1.		EM05005
475-	EM05005			105002	1	.3090	105004	1	-.8090		
476-	MPC	1		5006	1	-1.	105000	1	1.		EM05006
477-	EM05006			105002	1	0.	105004	1	-1.		
478-	MPC	1		5007	1	-1.	105000	1	1.		EM05007
479-	EM05007			105002	1	-.3090	105004	1	-.8090		
480-	MPC	1		5008	1	-1.	105000	1	1.		EM05008
481-	EM05008			105002	1	-.5878	105004	1	-.3090		
482-	MPC	1		5009	1	-1.	105000	1	1.		EM05009
483-	EM05009			105002	1	-.8090	105004	1	.3090		
484-	MPC	1		5010	1	-1.	105000	1	1.		EM05010
485-	EM05010			105002	1	-.9511	105004	1	.8090		
486-	MPC	1		5011	1	-1.	105000	1	1.		EM05011
487-	EM05011			105002	1	-1.	105004	1	1.		
488-	MPC	1		6001	1	-1.	106000	1	1.		EM06001
489-	EM06001			106002	1	1.	106004	1	1.		
490-	MPC	1		6002	1	-1.	106000	1	1.		EM06002
491-	EM06002			106002	1	.9511	106004	1	.8090		
492-	MPC	1		6003	1	-1.	106000	1	1.		EM06003
493-	EM06003			106002	1	.8090	106004	1	.3090		
494-	MPC	1		6004	1	-1.	106000	1	1.		EM06004
495-	EM06004			106002	1	.5878	106004	1	-.3090		
496-	MPC	1		6005	1	-1.	106000	1	1.		EM06005
497-	EM06005			106002	1	.3090	106004	1	-.8090		
498-	MPC	1		6006	1	-1.	106000	1	1.		EM06006
499-	EM06006			106002	1	0.	106004	1	-1.		
500-	MPC	1		6007	1	-1.	106000	1	1.		EM06007



## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
501- EM06007			106002	1		-.3090	106004	1	-.8090		
502- MPC	1		6008	1		-1.	106000	1	1.		EM06008
503- EM06008			106002	1		-.5878	106004	1	-.3090		
504- MPC	1		6009	1		-1.	106000	1	1.		EM06009
505- EM06009			106002	1		-.8090	106004	1	.3090		
506- MPC	1		6010	1		-1.	106000	1	1.		EM06010
507- EM06010			106002	1		-.9511	106004	1	.8090		
508- MPC	1		6011	1		-1.	106000	1	1.		EM06011
509- EM06011			106002	1		-1.	106004	1	1.		
510- MPC	1		7001	1		-1.	107000	1	1.		EM07001
511- EM07001			107002	1		1.	107004	1	1.		
512- MPC	1		7002	1		-1.	107000	1	1.		EM07002
513- EM07002			107002	1		.9511	107004	1	.8090		
514- MPC	1		7003	1		-1.	107000	1	1.		EM07003
515- EM07003			107002	1		.8090	107004	1	.3090		
516- MPC	1		7004	1		-1.	107000	1	1.		EM07004
517- EM07004			107002	1		.5878	107004	1	-.3090		
518- MPC	1		7005	1		-1.	107000	1	1.		EM07005
519- EM07005			107002	1		.3090	107004	1	-.8090		
520- MPC	1		7006	1		-1.	107000	1	1.		EM07006
521- EM07006			107002	1		0.	107004	1	-1.		
522- MPC	1		7007	1		-1.	107000	1	1.		EM07007
523- EM07007			107002	1		-.3090	107004	1	-.8090		
524- MPC	1		7008	1		-1.	107000	1	1.		EM07008
525- EM07008			107002	1		-.5878	107004	1	-.3090		
526- MPC	1		7009	1		-1.	107000	1	1.		EM07009
527- EM07009			107002	1		-.8090	107004	1	.3090		
528- MPC	1		7010	1		-1.	107000	1	1.		EM07010
529- EM07010			107002	1		-.9511	107004	1	.8090		
530- MPC	1		7011	1		-1.	107000	1	1.		EM07011
531- EM07011			107002	1		-1.	107004	1	1.		
532- MPC	1		8001	1		-1.	108000	1	1.		EM08001
533- EM08001			108002	1		1.	108004	1	1.		
534- MPC	1		8002	1		-1.	108000	1	1.		EM08002
535- EM08002			108002	1		.9511	108004	1	.8090		
536- MPC	1		8003	1		-1.	108000	1	1.		EM08003
537- EM08003			108002	1		.8090	108004	1	.3090		
538- MPC	1		8004	1		-1.	108000	1	1.		EM08004
539- EM08004			108002	1		.5878	108004	1	-.3090		
540- MPC	1		8005	1		-1.	108000	1	1.		EM08005
541- EM08005			108002	1		.3090	108004	1	-.8090		
542- MPC	1		8006	1		-1.	108000	1	1.		EM08006
543- EM08006			108002	1		0.	108004	1	-1.		
544- MPC	1		8007	1		-1.	108000	1	1.		EM08007
545- EM08007			108002	1		-.3090	108004	1	-.8090		
546- MPC	1		8008	1		-1.	108000	1	1.		EM08008
547- EM08008			108002	1		-.5878	108004	1	-.3090		
548- MPC	1		8009	1		-1.	108000	1	1.		EM08009
549- EM08009			108002	1		-.8090	108004	1	.3090		
550- MPC	1		8010	1		-1.	108000	1	1.		EM08010

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
551-	EM08010			108002	1	-.9511	108004	1	.8090		
552-	MPC	1		8011	1	-1.	108000	1	1.		EM08011
553-	EM08011			108002	1	-1.	108004	1	1.		
554-	MPC	1		9001	1	-1.	109000	1	1.		EM09001
555-	EM09001			109002	1	1.	109004	1	1.		
556-	MPC	1		9002	1	-1.	109000	1	1.		EM09002
557-	EM09002			109002	1	.9511	109004	1	.8090		
558-	MPC	1		9003	1	-1.	109000	1	1.		EM09003
559-	EM09003			109002	1	.8090	109004	1	.3090		
560-	MPC	1		9004	1	-1.	109000	1	1.		EM09004
561-	EM09004			109002	1	.5878	109004	1	-.3090		
562-	MPC	1		9005	1	-1.	109000	1	1.		EM09005
563-	EM09005			109002	1	.3090	109004	1	-.8090		
564-	MPC	1		9006	1	-1.	109000	1	1.		EM09006
565-	EM09006			109002	1	0.	109004	1	-1.		
566-	MPC	1		9007	1	-1.	109000	1	1.		EM09007
567-	EM09007			109002	1	-.3090	109004	1	-.8090		
568-	MPC	1		9008	1	-1.	109000	1	1.		EM09008
569-	EM09008			109002	1	-.5878	109004	1	-.3090		
570-	MPC	1		9009	1	-1.	109000	1	1.		EM09009
571-	EM09009			109002	1	-.8090	109004	1	.3090		
572-	MPC	1		9010	1	-1.	109000	1	1.		EM09010
573-	EM09010			109002	1	-.9511	109004	1	.8090		
574-	MPC	1		9011	1	-1.	109000	1	1.		EM09011
575-	EM09011			109002	1	-1.	109004	1	1.		
576-	MPC	1		10001	1	-1.	110000	1	1.		EM10001
577-	EM10001			110002	1	1.	110004	1	1.		
578-	MPC	1		10002	1	-1.	110000	1	1.		EM10002
579-	EM10002			110002	1	.9511	110004	1	.8090		
580-	MPC	1		10003	1	-1.	110000	1	1.		EM10003
581-	EM10003			110002	1	.8090	110004	1	.3090		
582-	MPC	1		10004	1	-1.	110000	1	1.		EM10004
583-	EM10004			110002	1	.5878	110004	1	-.3090		
584-	MPC	1		10005	1	-1.	110000	1	1.		EM10005
585-	EM10005			110002	1	.3090	110004	1	-.8090		
586-	MPC	1		10006	1	-1.	110000	1	1.		EM10006
587-	EM10006			110002	1	0.	110004	1	-1.		
588-	MPC	1		10007	1	-1.	110000	1	1.		EM10007
589-	EM10007			110002	1	-.3090	110004	1	-.8090		
590-	MPC	1		10008	1	-1.	110000	1	1.		EM10008
591-	EM10008			110002	1	-.5878	110004	1	-.3090		
592-	MPC	1		10009	1	-1.	110000	1	1.		EM10009
593-	EM10009			110002	1	-.8090	110004	1	.3090		
594-	MPC	1		10010	1	-1.	110000	1	1.		EM10010
595-	EM10010			110002	1	-.9511	110004	1	.8090		
596-	MPC	1		10011	1	-1.	110000	1	1.		EM10011
597-	EM10011			110002	1	-1.	110004	1	1.		
598-	MPC	1		11001	1	-1.	111000	1	1.		EM11001
599-	EM11001			111002	1	1.	111004	1	1.		
600-	MPC	1		11002	1	-1.	111000	1	1.		EM11002

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
601- EM11002				111002	1	.9511	111004	1	.8090		
602- MPC	1			11003	1	-1.	111000	1	1.		EM11003
603- EM11003				111002	1	.8090	111004	1	.3090		
604- MPC	1			11004	1	-1.	111000	1	1.		EM11004
605- EM11004				111002	1	.5878	111004	1	-.3090		
606- MPC	1			11005	1	-1.	111000	1	1.		EM11005
607- EM11005				111002	1	.3090	111004	1	-.8090		
608- MPC	1			11006	1	-1.	111000	1	1.		EM11006
609- EM11006				111002	1	0.	111004	1	-1.		
610- MPC	1			11007	1	-1.	111000	1	1.		EM11007
611- EM11007				111002	1	-.3090	111004	1	-.8090		
612- MPC	1			11008	1	-1.	111000	1	1.		EM11008
613- EM11008				111002	1	-.5878	111004	1	-.3090		
614- MPC	1			11009	1	-1.	111000	1	1.		EM11009
615- EM11009				111002	1	-.8090	111004	1	.3090		
616- MPC	1			11010	1	-1.	111000	1	1.		EM11010
617- EM11010				111002	1	-.9511	111004	1	.8090		
618- MPC	1			11011	1	-1.	111000	1	1.		EM11011
619- EM11011				111002	1	-1.	111004	1	1.		
620- OMIT1				1000006	THRU	1000009					
621- OMIT1				1000011	THRU	1000014					
622- OMIT1				1000016	THRU	1000019					
623- OMIT1				1000021	THRU	1000024					
624- OMIT1				1000026	THRU	1000029					
625- OMIT1				1000031	THRU	1000034					
626- OMIT1				1000036	THRU	1000039					
627- OMIT1				1000041	THRU	1000044					
628- OMIT1				1000046	THRU	1000049					
629- OMIT1				1000051	THRU	1000054					
630- OMIT1				3000006	THRU	3000009					
631- OMIT1				3000011	THRU	3000014					
632- OMIT1				3000016	THRU	3000019					
633- OMIT1				3000021	THRU	3000024					
634- OMIT1				3000026	THRU	3000029					
635- OMIT1				3000031	THRU	3000034					
636- OMIT1				3000036	THRU	3000039					
637- OMIT1				3000041	THRU	3000044					
638- OMIT1				3000046	THRU	3000049					
639- OMIT1				3000051	THRU	3000054					
640- OMIT1				5000006	THRU	5000009					
641- OMIT1				5000011	THRU	5000014					
642- OMIT1				5000016	THRU	5000019					
643- OMIT1				5000021	THRU	5000024					
644- OMIT1				5000026	THRU	5000029					
645- OMIT1				5000031	THRU	5000034					
646- OMIT1				5000036	THRU	5000039					
647- OMIT1				5000041	THRU	5000044					
648- OMIT1				5000046	THRU	5000049					
649- OMIT1				5000051	THRU	5000054					
650- PARAM	A999			4.0	.0						

CYLINDRICAL FLUID

APRIL 9, 1974 NASTRAN 2/ 1/73

		SORTED BULK DATA ECHO																	
CARD	COUNT	1	2	3	4	5	6	7	8	9									
651-	RINGFL	1	.2			1.	2	.4		1.									
652-	RINGFL	3	.6			1.	4	.8		1.									
653-	RINGFL	5	1.			1.	6	.2		.8									
654-	RINGFL	7	.4			.8	8	.6		.8									
655-	RINGFL	9	.8			.8	10	1.		.8									
656-	RINGFL	11	.2			.6	12	.4		.6									
657-	RINGFL	13	.6			.6	14	.8		.6									
658-	RINGFL	15	1.			.6	16	.2		.4									
659-	RINGFL	17	.4			.4	18	.6		.4									
660-	RINGFL	19	.8			.4	20	1.		.4									
661-	RINGFL	21	.2			.2	22	.4		.2									
662-	RINGFL	23	.6			.2	24	.8		.2									
663-	RINGFL	25	1.			.2	26	.2		0.0									
664-	RINGFL	27	.4			0.0	28	.6		0.0									
665-	RINGFL	29	.8			0.0	30	1.		0.0									
666-	RINGFL	31	.2			-.2	32	.4		-.2									
667-	RINGFL	33	.6			-.2	34	.8		-.2									
668-	RINGFL	35	1.			-.2	36	.2		-.4									
669-	RINGFL	37	.4			-.4	38	.6		-.4									
670-	RINGFL	39	.8			-.4	40	1.		-.4									
671-	RINGFL	41	.2			-.6	42	.4		-.6									
672-	RINGFL	43	.6			-.6	44	.8		-.6									
673-	RINGFL	45	1.			-.6	46	.2		-.8									
674-	RINGFL	47	.4			-.8	48	.6		-.8									
675-	RINGFL	49	.8			-.8	50	1.		-.8									
676-	RINGFL	51	.2			-1.	52	.4		-1.									
677-	RINGFL	53	.6			-1.	54	.8		-1.									
678-	RINGFL	55	1.			-1.													

ENDDATA

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
1 BEGIN      NO.7 DIRECT COMPLEX EIGENVALUE ANALYSIS - SERIES M1 $
2 FILE       KGGX#TAPE/ KGG#TAPE/ GOD#SAVE/ GMD#SAVE $
3 GP1        GEOM1,GEOM2,/GPL,EQEXIN,GPDT,CSTM,BGPD,T,SIL/V,N,LUSET/ C,N,
             123/V,N,NOGPDT $
4 SAVE       LUSET,NOGPDT $
5 PURGE      USET,GM,GO,KAA,BAA,MAA,K4AA,KFS,EST,ECT,PLTSETX,PLTPAR,GPSETS,
             ELSETS/NOGPDT $
6 CHKPNT     GPL,EQEXIN,GPDT,CSTM,BGPD,T,SIL,USET,GM,GO,KAA,BAA,MAA,K4AA,EST,
             ECT,PLTSETX,PLTPAR,GPSETS,ELSETS $
7 COND       LBL5,NOGPDT $
8 GP2        GEOM2,EQEXIN/ECT $
9 CHKPNT     ECT $
10 PLTSET     PCDB,EQEXIN,ECT/PLTSETX,PLTPAR,GPSETS,ELSETS/V,N,NSIL/ V,N,
             JUMPPLOT $
11 SAVE      NSIL,JUMPPLOT $
12 PRTMSG     PLTSETX// $
13 SETVAL     //V,N,PLTFLG/C,N,1/V,N,PFILE/C,N,0 $
14 SAVE      PLTFLG,PFILE $
15 COND       P1,JUMPPLOT $
16 PLOT       PLTPAR,GPSETS,ELSETS,CASECC,BGPD,T,EQEXIN,SIL,./PLOTX1/ V,N,
             NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $
17 SAVE      PFILE $
18 PRTMSG     PLOTX1// $
19 LABEL     P1 $
20 CHKPNT     PLTPAR,GPSETS,ELSETS $
21 GP3        GEOM3,EQEXIN,GEOM2/,GPTT/C,N,123/V,N,NOGRAV/C,N,123 $
22 CHKPNT     GPTT $
```

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
 DMAP-DMAP INSTRUCTION  
 NO.

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23  TAI.      .ECT,EPT,BGPD,T,SIL,GPTT,CSTM/EST.,GEI,ECPT,GPCT/V,N,LUSET/ C,N,
              123/V,N,NOSIMP#-1/C,N,0/V,N,NOGENL#-1/V,N,GENEL $

24  SAVE      NOSIMP,NOGENL,GENEL $

25  PURGE     K4GG,GPST,OGPST,MGG,BGG,K4NN,K4FF,K4AA,MNN,MFF,MAA,BNN,BFF,BAA,
              KGGX/NOSIMP / OGPST/GENEL $

26  CHKPNT    EST,ECPT,GPCT,GEI,K4GG,GPST,MGG,BGG,KGGX,OGPST.  K4NN,K4FF,
              K4AA,MNN,MFF,MAA,BNN,BFF,BAA $

27  COND      LBL1,NOSIMP $

28  SMA1      CSTM,MPT,ECPT,GPCT,DIT/KGGX,K4GG,GPST/V,N,NOGENL/V,N,NOK4GG $

29  SAVE      NOK4GG $

30  PURGE     K4NN,K4FF,K4AA/NOK4GG $

31  CHKPNT    KGGX,GPST,K4GG,K4NN,K4FF,K4AA $

32  SMA2      CSTM,MPT,ECPT,GPCT,DIT/MGG,BGG/V,Y,WTMASS#1.0/V,N,NOMGG/ V,N,
              NOBGG#-1/V,Y,COUPMASS/V,Y,CPBAR/V,Y,CPROD/V,Y,CPQUAD1/ V,Y,
              CPQUAD2/V,Y,CPTRIA1/V,Y,CPTRIA2/V,Y,CPTUBE/V,Y,CPDPLT/ V,Y,
              CPTRPLT/V,Y,CPTRBSC $

33  SAVE      NOMGG,NOBGG $

34  PURGE     BNN,BFF,BAA/NOBGG/MNN,MFF,MAA/NOMGG $

35  CHKPNT    MGG,MNN,MFF,MAA,BGG,BNN,BFF,BAA $

36  COND      LBL1,GRDPNT $

37  COND      ERROR3,NOMGG $

38  GPWG      BGPDT,CSTM,EOEXIN,MGG/OGPWG/V,Y,GRDPNT#-1/V,Y,WTMASS $

39  OFF       OGPWG,.....//V,N,CARDNO $

40  SAVE      CARDNO $

41  LABEL     LBL1 $

42  EQUIV     KGGX,KGG/NOGENL $

43  CHKPNT    KGG $

44  COND      LBL11,NOGENL $

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NASTRAN SOURCE PROGRAM COMPILATION  
DMAP-DMAP INSTRUCTION  
NO.

45 SMA3 GEI,KGGX/KGG/V,N,LUSET/V,N,NOGENL/V,N,NOSIMP \$

46 CHKPNT KGG \$

47 LABEL LBL11 \$

48 PARAM //C,N,MPY/V,N,NSKIP/C,N,0/C,N,0 \$

49 GP4 CASECC,GEOM4,EQEXIN,SIL,GPDT/RG,,USET,/V,N,LUSET/V,N,MPCF1/V,  
N,MPCF2/V,N,SINGLE/V,N,OMIT/V,N,REACT/V,N,NSKIP/V,N,REPEAT/  
V,N,NOSET#-1/V,N,NOL/V,N,NOA#-1 \$

50 SAVE MPCF1,MPCF2,SINGLE,OMIT,NSKIP,NOSET,REACT,REPEAT,NOL,NOA \$

50 MATGPR GPL,USET,SIL,MGG//C,N,G

50 MATGPR GPL,USET,SIL,KGG//C,N,G

51 PURGE GM,GMD/MPCF1/GO,GOD/OMIT/KFS,QPC/SINGLE \$

52 EQUIV KGG,KNN/MPCF1/MGG,MNN/MPCF1/ BGG,BNN/MPCF1/K4GG,K4NN/MPCF1 \$

53 CHKPNT GM,GMD,RG,GO,GOD,KFS,QPC,USET,KNN,MNN,BNN,K4NN \$

54 COND LBL4,GENEL \$

55 COND LBL4,NOSIMP \$

56 GPSP GPL,GPST,USET,SIL/OGPST \$

57 OFP OGPST,,,,,/V,N,CARDNO \$

58 SAVE CARDNO \$

59 LABEL LBL4 \$

60 COND LBL2,MPCF2 \$

61 MCE1 USET,RG/GM \$

62 CHKPNT GM \$

63 MCE2 USET,GM,KGG,MGG,BGG,K4GG/KNN,MNN,BNN,K4NN \$

64 CHKPNT KNN,MNN,BNN,K4NN \$

65 LABEL LBL2 \$

66 EQUIV KNN,KFF/SINGLE/MNN,MFF/SINGLE/BNN,BFF/SINGLE/K4NN,K4FF/SINGLE \$

NASTRAN SOURCE PROGRAM COMPILATION  
DMAP-DMAP INSTRUCTION  
NO.

67 CHKPNT KFF,MFF,BFF,K4FF \$  
68 COND LBL3,SINGLE \$  
69 SCE1 USET,KNN,MNN,BNN,K4NN/KFF,KFS,,MFF,BFF,K4FF \$  
70 CHKPNT KFS,KFF,MFF,BFF,K4FF \$  
71 LABEL LBL3 \$  
72 EQUIV KFF,KAA/OMIT/ MFF,MAA/OMIT/BFF,BAA/OMIT/K4FF,K4AA/OMIT \$  
73 CHKPNT KAA,MAA,BAA,K4AA \$  
73 MATGPR GPL,USET,SIL,MFF//C,N,F  
73 MATGPR GPL,USET,SIL,KFF//C,N,F  
74 COND LBL5,OMIT \$  
75 SMP1 USET,KFF,,,/GO,KAA,K00,L00,U00,,,,, \$  
76 CHKPNT GO,KAA \$  
77 COND LBLM,NOMGG \$  
78 SMP2 USET,GO,MFF/MAA \$  
79 CHKPNT MAA \$  
80 LABEL LBLM \$  
81 COND LBLB,NOBGG \$  
82 SMP2 USET,GO,BFF/BAA \$  
83 CHKPNT BAA \$  
84 LABEL LBLB \$  
85 COND LBL5,NOK4GG \$  
86 SMP2 USET,GO,K4FF/K4AA \$  
87 CHKPNT K4AA \$  
88 LABEL LBL5 \$  
89 DPD DYNAMICS,GPL,SIL,USET/GPLD,SILD,USETD,TFPOOL,,,,,EED,EQDYN/V,  
N,LUSET/V,N,LUSETD/V,N,NOTFL/V,N,NODLT/V,N,NOPSDL/V,N,NOFRL/



N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
 DMAP-DMAP INSTRUCTION  
 NO.

V,N,NOMLFT/V,N,NOTRL/V,N,NOEED/C,N,123/V,N,NOUE \$

90 SAVE LUSED,NOUE \$

91 EQUIV GO,GOD/NOUE/GM,GMD/NOUE \$

92 CHKPNT USETD,EED,EQDYN,TFPOOL,GOD,GMD,SILD,GPLD \$

93 PARAM //C,N,ADD/V,N,NEVER/C,N,1/C,N,0 \$

94 PARAM //C,N,MPY/V,N,REPEATE/C,N,1/C,N,-1 \$

95 BMG MATPOOL,BGPD,EQEXIN,CSTM,BDPOOL/V,N,NOKBFL/V,N,NOABFL/ V,N,  
MFACT \$

96 SAVE MFACT,NOKBFL,NOABFL \$

97 PARAM //C,N,AND/V,N,NOFL/V,N,NOABFL/V,N,NOKBFL \$

98 PURGE KBFL/NOKBFL/ ABFL/NOABFL \$

99 COND LBLFL3,NOFL \$

100 MTRXIN, ,BDPOOL,EQDYN,,/ABFL,KBFL,/V,N,LUSED/V,N,NOABFL/V,N,NOKBFL/C,  
N,0 \$

101 SAVE NOABFL,NOKBFL \$

101 MATGPR GPL,USET,SIL,ABFL//C,N,P

101 MATGPR GPL,USET,SIL,KBFL//C,N,P

102 LABEL LBLFL3 \$

103 CHKPNT ABFL,KBFL \$

104 JUMP LBL13 \$

105 LABEL LBL13 \$

106 PURGE PHID,CLAMA,OPHID,OQPC1,OCPTH,OEESC1,OEFC1,CPHP,OPC, K2PP,  
M2PP,B2PP,K2DD,M2DD,B2DD/NEVER \$

107 CASE CASECC,/CASEXX/C,N,CEIGN/V,N,REPEATE/V,N,NOLoop \$

108 SAVE REPEATE,NOLoop \$

109 CHKPNT CASEXX \$

110 MTRXIN CASEXX,MATPOOL,EQDYN,,TFPOOL/K2DPP,M2DPP,B2PP/V,N,LUSED/V,N,

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
 DMAP-DMAP INSTRUCTION

```

NO.          NOK2DPP/V,N,NOM2DPP/V,N,NOB2PP $

111  SAVE    NOK2DPP,NOM2DPP,NOB2PP $

112  PARAM   //C,N,AND/V,N,NOM2PP/V,N,NOABFL/V,N,NOM2DPP $

113  PARAM   //C,N,AND/V,N,NOK2PP/V,N,NOFL /V,N,NOK2DPP $

114  EQUIV   K2DPP,K2XPP/NOKBFL/ M2DPP,M2PP/NOABFL $

115  COND    LBLFL1,NOKBFL $

116  EQUIV   KBFL,K2XPP/NOK2DPP $

117  COND    LBLFL1,NOK2DPP $

118  ADD     KBFL,K2DPP/K2XPP $

119  LABEL   LBLFL1 $

120  EQUIV   K2XPP,K2PP/NOABFL $

121  COND    LBLFL2,NOABFL $

122  ADD     ABFL,K2XPP/K2PP/C,N,X-1.0,0.0R $

123  TRNSP   ABFL/ABFLT $

124  ADD     ABFLT,M2DPP/M2PP/V,N,MFACT $

125  LABEL   LBLFL2 $

126  PARAM   //C,N,AND/V,N,BDEBA/V,N,NOUE/V,N,NOB2PP $

127  PARAM   //C,N,AND/V,N,MDEMA/V,N,NOUE/V,N,NOM2PP $

128  PARAM   //C,N,AND/V,N,KDEK2/V,N,NOGENL/V,N,NOSIMP $

129  PURGE   K2DD/NOK2PP/M2DD/NOM2PP/B2DD/NOB2PP $

130  EQUIV   M2PP,M2DD/NOA/B2PP,B2DD/NOA/K2PP,K2DD/NOA/MAA,MDD/MDEMA/BAA,
             BDD/BDEBA $

131  CHKPNT  K2PP,M2PP,B2PP,K2DD,M2DD,B2DD,BDD,MDD $

132  COND    LBL18,NOGPDT $

133  GKAD    USETD,GM,GD,KAA,BAA,MAA,K4AA,K2PP,M2PP,B2PP/KDD,BDD,MDD,GMD,
             GDD,K2DD,M2DD,B2DD/C,N,CMPLEV/C,N,DISP/C,N,DIRECT/C,Y,G#0.0/C,
             N,0.0/C,N,0.0/V,N,NOK2PP/V,N,NOM2PP/V,N,NOB2PP/ V,N,MPCF1/V,

```

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
 DMAP-DMAP INSTRUCTION

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NO.          N,SINGLE/V,N,OMIT/V,N,NOUE/V,N,NOK4GG/V,N,NOBGG/V,N,KDEK2/C,N,
            -1 $

134 LABEL    LBL18 $

135 EQUIV     B2DD,BDD/NOBGG/ M2DD,MDD/NOSIMP/ K2DD,KDD/KDEK2 $

136 CHKPNT    KDD,BDD,MDD,GDD,GMD $

136 MATGPR    GPLD,USETD,SILD,MDD//C,N,D

136 MATGPR    GPLD,USETD,SILD,KDD//C,N,D

136 SEEMAT    MGG,KGG,MFF,KFF,ABFL//C,N,PRINT

136 SEEMAT    KBFL,MDD,KDD,./C,N,PRINT

136 PARTN     KDD,P9./KBP,AEM,.,KE/C,N,-1 $

136 PARTN     KBP,G9./K11,K21,K12,K22/C,N,-1 $

136 PARTN     AEM,G9,UP/A1M,..A2M/C,N,1 $

136 PARTN     KE,UP./KE1,..KE2/C,N,-1 $

136 TRNSP     A2M/A2MT $

136 SOLVE     K22,A2MT/PDU2/C,N,1/C,N,-1 $

136 SOLVE     A1M,K12/M2L/C,N,1 $

136 MPYAD     M2L,PDU2./TU12/C,N,0/C,N,-1 $

136 ADD        PDU2./PDU3/C,Y,A999#%1.0.0.0# $

136 PARAM     //C,N,NOP/V,N,TRUE#-1 $

136 EQUIV     PDU3,PDU2/TRUE $

136 COND      PDUN09,TRUE $

136 MATPRN     PDU3,...,// $

136 LABEL     PDUN09 $

136 MPYAD     A2M,PDU2./MFLD/C,N,0/C,N,-1 $

136 OUTPUT3    MFLD,PDU2,TU12,..//C,N,0/C,Y,N1#AMF/C,Y,N2#APD/C,Y,N3#ATU $

136 SMPYAD     TU12,KE1,TU12,..,KE2/KEB/C,N,3/C,N,1/C,N,1/C,N,2/C,N,1 $
  
```

NASTRAN SOURCE PROGRAM COMPILATION  
DMAP-DMAP INSTRUCTION  
NO.

```
136 SOLVE K22,K21/CP2/C,N,1/C,N,-1 $
136 MATPRN K11,K12,K22,.,./ $
136 MATPRN A1M,A2M,KE1,.,./ $
136 MATPRN PDU2,MFLD,TU12,.,./ $
136 MATPRN KEB,K11,CP2,.,./ $
136 EXIT
137 COND ERROR1,NOEED $
138 CEAD KDD,BDD,MDD,EED,CASEXX/PHID,CLAMA,OCEIGS/V,N,EIGVS $
139 SAVE EIGVS $
140 CHKPNT PHID,CLAMA,OCEIGS $
141 OFF OCEIGS,CLAMA,.,./V,N,CARDNO $
142 SAVE CARDNO $
143 COND LBL16,EIGVS $
144 VDR CASEXX,EQDYN,USED,PHID,CLAMA,./OPHID,/C,N,CEIGN/C,N,DIRECT/C,
N,0/V,N,NOD/V,N,NOP/C,N,0 $
145 SAVE NOD,NOP $
146 COND LBL15,NOD $
147 OFF OPHID,.,.,./V,N,CARDNO $
148 SAVE CARDNO $
149 LABEL LBL15 $
150 COND LBL16,NOP $
151 EQUIV PHID,CPHIP/NOA $
152 COND LBL17,NOA $
153 SDR1 USED,., PHID,.,GOD,GMD,.,KFS,./CPHIP,.,OPC/C,N,1/C,N,DYNAMICS $
154 LABEL LBL17 $
155 CHKPNT CPHIP,OPC $
```

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
D M A P - D M A P I N S T R U C T I O N  
N O .

156 SDR2 CASEXX,CSTM,MPT,DIT,EODYN,SILD,...,CLAMA,QPC,CPHIP,EST,/,OOPCI,  
OCPHIP,OESC1,OEFC1,/C,N,CEIG \$

157 OFF OCPHIP,OOPCI,OEFC1,OESC1,./V,N,CARDNO \$

158 SAVE CARDNO \$

159 LABEL LBL16 \$

160 COND FINIS,REPEATE \$

161 REPT LBL13,100 \$

162 JUMP ERROR2 \$

163 JUMP FINIS \$

164 LABEL ERROR2 \$

165 PRTPARM //C,N,-2/C,N,DIRCEAD \$

166 LABEL ERROR1 \$

167 PRTPARM //C,N,-1/C,N,DIRCEAD \$

168 LABEL ERROR3 \$

169 PRTPARM //C,N,-3/C,N,DIRCEAD \$

170 LABEL FINIS \$

171 END \$

\*\*NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM\*\*

**Appendix C3**  
**FLUID FILLED CIRCULAR CYLINDRICAL SHELL**  
**HYDROELASTIC VIBRATION ANALYSIS – HARMONICS**  
 **$n = 0, 2, 4$**

APRIL 11. 1974

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

ID,CAP60,COPPOLINO  
APP DISP  
SOL 3.0  
TIME 20  
DIAG 2  
DIAG 7,8,13,14,19,21,22  
ALTER 74  
ADD MAA,MFLD/MAH \$  
PARAM //C.N,NOP/V.N,TRLE=-1 \$  
EQUIV MAH,MAA/TRUE \$  
COND MAHNO9,TRUE \$  
MATPRN MAH,...// \$  
LABEL MAHNO9 \$  
ALTER 88  
SEEMAT MGG,KGG,...//C.N,PRINT  
ALTER 91  
MATGPR GPL,USET,SIL,PHIA//C.N,A  
ALTER 107  
SMPYAD PHIA,KAA,PHIA,.../KH/C.N,3/C.N,1/C.N,1/C.N,2/C.N,1 \$  
SOLVE MI,KH/WH/C.N,1 \$  
SMPYAD PDU2,PHIA,WH,.../PD2/C.N,3 \$  
MPYAD TUI2,PHIA,/PHF/C.N,0 \$  
MATPRN WH,PD2,PHF,...// \$  
ENDALTER  
CEND

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

APRIL 11, 1974 NASTRAN 5/13/72

C A S E C O N T R O L D E C K E C H O

CARD  
COUNT

1	TITLE=AXISYMMETRIC CIRC. CYL. WITH FLUID
2	SUBTITLE=HARMONIC REDUCTION
3	MAXLINES=120000
4	SPC=1
5	NPC=1
6	METHOD=1
7	VECTOR=ALL
8	BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.



S O R T E D B U L K D A T A E C H O														
CARD COUNT	1	2	3	4	5	6	7	8	9	10				
1-	CORD2C	1		0.0	0.0	0.0	0.0	0.0	1.	ECOC				
2-	ECOC	1.	0.	0.										
3-	CQUAD2	2	1	2	3	14	13	.00000						
4-	CQUAD2	3	1	3	4	15	14	.00000						
5-	CQUAD2	4	1	4	5	16	15	.00000						
6-	CQUAD2	5	1	5	6	17	16	.00000						
7-	CQUAD2	6	1	6	7	18	17	.00000						
8-	CQUAD2	7	1	7	8	19	18	.00000						
9-	CQUAD2	8	1	8	9	20	19	.00000						
10-	CQUAD2	9	1	9	10	21	20	.00000						
11-	CQUAD2	10	1	10	11	22	21	.00000						
12-	CQUAD2	11	1	11	12	23	22	.00000						
13-	CQUAD2	13	1	13	14	25	24	.00000						
14-	CQUAD2	14	1	14	15	26	25	.00000						
15-	CQUAD2	15	1	15	16	27	26	.00000						
16-	CQUAD2	16	1	16	17	28	27	.00000						
17-	CQUAD2	17	1	17	18	29	28	.00000						
18-	CQUAD2	18	1	18	19	30	29	.00000						
19-	CQUAD2	19	1	19	20	31	30	.00000						
20-	CQUAD2	20	1	20	21	32	31	.00000						
21-	CQUAD2	21	1	21	22	33	32	.00000						
22-	CQUAD2	22	1	22	23	34	33	.00000						
23-	CQUAD2	24	1	24	25	36	35	.00000						
24-	CQUAD2	25	1	25	26	37	36	.00000						
25-	CQUAD2	26	1	26	27	38	37	.00000						
26-	CQUAD2	27	1	27	28	39	38	.00000						
27-	CQUAD2	28	1	28	29	40	39	.00000						
28-	CQUAD2	29	1	29	30	41	40	.00000						
29-	CQUAD2	30	1	30	31	42	41	.00000						
30-	CQUAD2	31	1	31	32	43	42	.00000						
31-	CQUAD2	32	1	32	33	44	43	.00000						
32-	CQUAD2	33	1	33	34	45	44	.00000						
33-	CQUAD2	35	1	35	36	47	46	.00000						
34-	CQUAD2	36	1	36	37	48	47	.00000						
35-	CQUAD2	37	1	37	38	49	48	.00000						
36-	CQUAD2	38	1	38	39	50	49	.00000						
37-	CQUAD2	39	1	39	40	51	50	.00000						
38-	CQUAD2	40	1	40	41	52	51	.00000						
39-	CQUAD2	41	1	41	42	53	52	.00000						
40-	CQUAD2	42	1	42	43	54	53	.00000						
41-	CQUAD2	43	1	43	44	55	54	.00000						
42-	CQUAD2	44	1	44	45	56	55	.00000						
43-	CQUAD2	46	1	46	47	58	57	.00000						
44-	CQUAD2	47	1	47	48	59	58	.00000						
45-	CQUAD2	48	1	48	49	60	59	.00000						
46-	CQUAD2	49	1	49	50	61	60	.00000						
47-	CQUAD2	50	1	50	51	62	61	.00000						
48-	CQUAD2	51	1	51	52	63	62	.00000						
49-	CQUAD2	52	1	52	53	64	63	.00000						
50-	CQUAD2	53	1	53	54	65	64	.00000						

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

APRIL 11, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO														
CARD	1	2	3	4	5	6	7	8	9	10				
COUNT	..	..	..	..	..	..	..	..	..	..				
51-	CQUAD2	54	1	54	55	66	65	.00000						
52-	CQUAD2	55	1	55	56	67	66	.00000						
53-	CQUAD2	57	1	57	58	69	68	.00000						
54-	CQUAD2	58	1	58	59	70	69	.00000						
55-	CQUAD2	59	1	59	60	71	70	.00000						
56-	CQUAD2	60	1	60	61	72	71	.00000						
57-	CQUAD2	61	1	61	62	73	72	.00000						
58-	CQUAD2	62	1	62	63	74	73	.00000						
59-	CQUAD2	63	1	63	64	75	74	.00000						
60-	CQUAD2	64	1	64	65	76	75	.00000						
61-	CQUAD2	65	1	65	66	77	76	.00000						
62-	CQUAD2	66	1	66	67	78	77	.00000						
63-	CQUAD2	68	1	68	69	80	79	.00000						
64-	CQUAD2	69	1	69	70	81	80	.00000						
65-	CQUAD2	70	1	70	71	82	81	.00000						
66-	CQUAD2	71	1	71	72	83	82	.00000						
67-	CQUAD2	72	1	72	73	84	83	.00000						
68-	CQUAD2	73	1	73	74	85	84	.00000						
69-	CQUAD2	74	1	74	75	86	85	.00000						
70-	CQUAD2	75	1	75	76	87	86	.00000						
71-	CQUAD2	76	1	76	77	88	87	.00000						
72-	CQUAD2	77	1	77	78	89	88	.00000						
73-	CQUAD2	79	1	79	80	91	90	.00000						
74-	CQUAD2	80	1	80	81	92	91	.00000						
75-	CQUAD2	81	1	81	82	93	92	.00000						
76-	CQUAD2	82	1	82	83	94	93	.00000						
77-	CQUAD2	83	1	83	84	95	94	.00000						
78-	CQUAD2	84	1	84	85	96	95	.00000						
79-	CQUAD2	85	1	85	86	97	96	.00000						
80-	CQUAD2	86	1	86	87	98	97	.00000						
81-	CQUAD2	87	1	87	88	99	98	.00000						
82-	CQUAD2	88	1	88	89	100	99	.00000						
83-	CQUAD2	90	1	90	91	102	101	.00000						
84-	CQUAD2	91	1	91	92	103	102	.00000						
85-	CQUAD2	92	1	92	93	104	103	.00000						
86-	CQUAD2	93	1	93	94	105	104	.00000						
87-	CQUAD2	94	1	94	95	106	105	.00000						
88-	CQUAD2	95	1	95	96	107	106	.00000						
89-	CQUAD2	96	1	96	97	108	107	.00000						
90-	CQUAD2	97	1	97	98	109	108	.00000						
91-	CQUAD2	98	1	98	99	110	109	.00000						
92-	CQUAD2	99	1	99	100	111	110	.00000						
93-	CQUAD2	101	1	101	102	113	112	.00000						
94-	CQUAD2	102	1	102	103	114	113	.00000						
95-	CQUAD2	103	1	103	104	115	114	.00000						
96-	CQUAD2	104	1	104	105	116	115	.00000						
97-	CQUAD2	105	1	105	106	117	116	.00000						
98-	CQUAD2	106	1	106	107	118	117	.00000						
99-	CQUAD2	107	1	107	108	119	118	.00000						
100-	CQUAD2	108	1	108	109	120	119	.00000						

SORTED BULK DATA ECHO

```

CARD
COUNT . 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
101- CQUAD2 109 1 109 110 121 120 .00000
102- CQUAD2 110 1 110 111 122 121 .00000
103- DMI MFLD 0 1 1 2 30 30 6AMF 0
104- DMI *MFLD 1 1 1 5.61138317E-02 *AMF 1
105- *AMF 1 1.03753539E-09 1.74902981E-09 3.54101434E-02 -1.17619758E-09*AMF 2
106- *AMF 2 3.99240818E-09 2.90458575E-02 -2.14204410E-09 4.51854376E-09*AMF 3
107- *AMF 3 2.67748497E-02 -2.62538569E-09 4.61171368E-09 2.58644857E-02*AMF 4
108- *AMF 4 -2.88329072E-09 4.60591210E-09 2.54706964E-02 -3.02422776E-09*AMF 5
109- *AMF 5 4.58629046E-09 2.52929702E-02 -3.10135118E-09 4.57119853E-09*AMF 6
110- *AMF 6 2.52118781E-02 -3.14255666E-09 4.56220661E-09 2.51769051E-02*AMF 7
111- *AMF 7 -3.16256843E-09 4.55771954E-09 1.25835759E-02 -2.14254015E-09*AMF 8
112- *AMF 8 2.37040809E-09 *AMF 9
113- DMI *MFLD 2 1 1.03753539E-09 *AMF 10
114- *AMF 10 2.26114988E-02 7.61923413E-10 -1.17619758E-09 9.21048224E-03*AMF 11
115- *AMF 11 -1.17605836E-09 -2.14204410E-09 4.30269912E-03 -1.12416187E-09*AMF 12
116- *AMF 12 -2.62538569E-09 2.16825819E-03 -7.68552999E-10 -2.88329072E-09*AMF 13
117- *AMF 13 1.13540888E-03 -4.70962380E-10 -3.02422776E-09 6.07476337E-04*AMF 14
118- *AMF 14 -2.75142797E-10 -3.10135118E-09 3.31870979E-04 -1.58317554E-10*AMF 15
119- *AMF 15 -3.14255666E-09 1.89498416E-04 -9.33349370E-11 -3.16256843E-09*AMF 16
120- *AMF 16 1.21905570E-04 -6.12229434E-11 -1.58183555E-09 5.10035024E-05*AMF 17
121- *AMF 17 -2.39782222E-11 *AMF 18
122- DMI *MFLD 3 1 1.74902981E-09 *AMF 19
123- *AMF 19 7.61923413E-10 1.83615163E-02 3.99240818E-09 -1.17605836E-09*AMF 20
124- *AMF 20 5.28116524E-03 4.51854376E-09 -1.12416187E-09 1.61713664E-03*AMF 21
125- *AMF 21 4.61171368E-09 -7.68552999E-10 5.16120810E-04 4.60591210E-09*AMF 22
126- *AMF 22 -4.70962380E-10 1.68953789E-04 4.58629046E-09 -2.75142797E-10*AMF 23
127- *AMF 23 5.61394263E-05 4.57119853E-09 -1.58317554E-10 1.88335543E-05*AMF 24
128- *AMF 24 4.56220661E-09 -9.33349370E-11 6.41311362E-06 4.55771954E-09*AMF 25
129- *AMF 25 -6.12229434E-11 2.38093708E-06 2.27821051E-09 -2.58151139E-11*AMF 26
130- *AMF 26 7.22207631E-07 *AMF 27
131- DMI *MFLD 4 1 3.54101434E-02 *AMF 28
132- *AMF 28 -1.17619758E-09 3.99240818E-09 8.51596594E-02 -1.10450804E-09*AMF 29
133- *AMF 29 6.26756957E-09 6.21849895E-02 -3.80158127E-09 8.60412186E-09*AMF 30
134- *AMF 30 5.49103394E-02 -5.02533126E-09 9.12445586E-09 5.22455387E-02*AMF 31
135- *AMF 31 -5.64961056E-09 9.19800414E-09 5.11574484E-02 -5.92463856E-09*AMF 32
136- *AMF 32 9.17711418E-09 5.06825671E-02 -6.16678264E-05 9.14849707E-09*AMF 33
137- *AMF 33 5.04698716E-02 -6.26391738E-09 9.12892162E-09 5.03790267E-02*AMF 34
138- *AMF 34 -6.31108321E-09 9.11859033E-09 2.51769088E-02 -4.27954916E-09*AMF 35
139- *AMF 35 4.74222261E-09 *AMF 36
140- DMI *MFLD 5 1 -1.17619758E-09 *AMF 37
141- *AMF 37 9.21048224E-03 -1.17605836E-09 -1.10450804E-09 2.69141980E-02*AMF 38
142- *AMF 38 -3.62237795E-10 -3.80158127E-09 1.13787390E-02 -1.94461114E-09*AMF 39
143- *AMF 39 -5.02533126E-09 5.43810800E-03 -1.59512425E-09 -5.64961056E-09*AMF 40
144- *AMF 40 2.77573429E-03 -1.04369580E-09 -5.98463856E-09 1.46727962E-03*AMF 41
145- *AMF 41 -6.29279961E-10 -6.16678264E-09 7.96974637E-04 -3.68477653E-10*AMF 42
146- *AMF 42 -6.26391738E-09 4.53776447E-04 -2.19540483E-10 -6.31108321E-09*AMF 43
147- *AMF 43 2.91505363E-04 -1.44935050E-10 -3.15676263E-09 1.21905570E-04*AMF 44
148- *AMF 44 -5.68684683E-11 *AMF 45
149- DMI *MFLD 6 1 3.99240818E-09 *AMF 46
150- *AMF 46 -1.17605836E-09 5.28116524E-03 6.26756957E-09 -3.62237795E-10*AMF 47

```

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
151- *AMF	47	1.99786499E-02	8.60412186E-09	-1.94461114E-09	5.79728559E-03	*AMF	48			
152- *AMF	48	9.12445586E-09	-1.59512425E-09	1.78609043E-03	9.19800414E-09	*AMF	49			
153- *AMF	49	-1.04369580E-09	5.72260236E-04	9.17711418E-09	-6.29279961E-10	*AMF	50			
154- *AMF	50	1.87787344E-04	9.14849707E-09	-3.68477693E-10	6.25525427E-05	*AMF	51			
155- *AMF	51	9.12892162E-09	-2.19540483E-10	2.12144951E-05	9.11859033E-09	*AMF	52			
156- *AMF	52	-1.44935050E-10	7.85752854E-06	4.55777993E-09	-6.12724036E-11	*AMF	53			
157- *AMF	53	2.38093617E-06				*AMF	54			
158- DMI	*MFLD	7		1		2.90458575E-02	*AMF	55		
159- *AMF	55	-2.14204410E-09	4.51854376E-09	6.21849895E-02	-3.80158127E-09	*AMF	56			
160- *AMF	56	8.60412186E-09	1.11024141E-01	-3.98779676E-09	1.08734852E-08	*AMF	57			
161- *AMF	57	8.76556635E-02	-6.82580747E-09	1.31904123E-08	8.02032948E-02	*AMF	58			
162- *AMF	58	-8.12668333E-09	1.36956544E-08	7.74573684E-02	-8.79216699E-09	*AMF	59			
163- *AMF	59	1.37602107E-08	7.63342977E-02	-9.14720744E-09	1.37348337E-08	*AMF	60			
164- *AMF	60	7.58497119E-02	-9.33530941E-09	1.37048808E-08	7.56467581E-02	*AMF	61			
165- *AMF	61	-9.42648626E-09	1.36866412E-08	3.77954580E-02	-6.40362785E-09	*AMF	62			
166- *AMF	62	7.11737158E-09				*AMF	63			
167- DMI	*MFLD	8		1		-2.14204410E-09	*AMF	64		
168- *AMF	64	4.30269912E-03	-1.12416187E-09	-3.80158127E-09	1.13787390E-02	*AMF	65			
169- *AMF	65	-1.94461114E-09	-3.98779676E-09	2.80496068E-02	-8.33200176E-10	*AMF	66			
170- *AMF	66	-6.82580747E-09	1.19862184E-02	-2.21975394E-09	-8.12668333E-09	*AMF	67			
171- *AMF	67	5.76997921E-03	-1.75344161E-09	-8.79216699E-09	2.96523259E-03	*AMF	68			
172- *AMF	68	-1.13703069E-09	-9.14720744E-09	1.58918533E-03	-6.90502766E-10	*AMF	69			
173- *AMF	69	-9.33530941E-09	8.98981467E-04	-4.20077750E-10	-9.42648626E-09	*AMF	70			
174- *AMF	70	5.75681916E-04	-2.80763413E-10	-4.71536410E-09	2.40501904E-04	*AMF	71			
175- *AMF	71	-1.10544240E-10				*AMF	72			
176- DMI	*MFLD	9		1		4.51854376E-09	*AMF	73		
177- *AMF	73	-1.12416187E-09	1.61713664E-03	8.60412186E-09	-1.94461114E-09	*AMF	74			
178- *AMF	74	5.79728559E-03	1.08734852E-08	-8.33200176E-10	2.01476067E-02	*AMF	75			
179- *AMF	75	1.31904123E-08	-2.21975394E-09	5.85342571E-03	1.36956544E-08	*AMF	76			
180- *AMF	76	-1.75344161E-09	1.80492387E-03	1.37602107E-08	-1.13703069E-09	*AMF	77			
181- *AMF	77	5.78673324E-04	1.37348337E-08	-6.90502766E-10	1.90168270E-04	*AMF	78			
182- *AMF	78	1.37048808E-08	-4.20077750E-10	6.39969512E-05	1.36866412E-08	*AMF	79			
183- *AMF	79	-2.80763413E-10	2.35954358E-05	6.84057255E-09	-1.19282903E-10	*AMF	80			
184- *AMF	80	7.13532063E-06				*AMF	81			
185- DMI	*MFLD	10		1		2.67748497E-02	*AMF	82		
186- *AMF	82	-2.62538569E-09	4.61171368E-09	5.49103394E-02	-5.02533126E-09	*AMF	83			
187- *AMF	83	9.12445586E-09	8.76556635E-02	-6.82580747E-09	1.31904123E-08	*AMF	84			
188- *AMF	84	1.36317074E-01	-7.08914527E-09	1.54446838E-08	1.12867534E-01	*AMF	85			
189- *AMF	85	-9.96836391E-09	1.77526189E-08	1.05380177E-01	-1.12892486E-08	*AMF	86			
190- *AMF	86	1.82533775E-08	1.02624536E-01	-1.19606938E-08	1.83165945E-08	*AMF	87			
191- *AMF	87	1.01511240E-01	-1.23097728E-08	1.82925532E-08	1.01061583E-01	*AMF	88			
192- *AMF	88	-1.24778659E-08	1.82670874E-08	5.04698791E-02	-8.50303294E-09	*AMF	89			
193- *AMF	89	9.49877332E-09				*AMF	90			
194- DMI	*MFLD	11		1		-2.62538569E-09	*AMF	91		
195- *AMF	91	2.16825819E-03	-7.68552999E-10	-5.02533126E-09	5.43810800E-03	*AMF	92			
196- *AMF	92	-1.59512425E-09	-6.82580747E-09	1.19862184E-02	-2.21975394E-09	*AMF	93			
197- *AMF	93	-7.08914527E-09	2.83814743E-02	-9.91517535E-10	-9.56836391E-09	*AMF	94			
198- *AMF	94	1.21757165E-02	-2.31308883E-09	-1.12892486E-08	5.89188188E-03	*AMF	95			
199- *AMF	95	-1.81466464E-09	-1.19606938E-08	3.06723965E-03	-1.18863075E-09	*AMF	96			
200- *AMF	96	-1.23097728E-08	1.71109079E-03	-7.51725793E-10	-1.24778659E-08	*AMF	97			

SCRTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
201~*AMF	97	1.08848000E-03	-5.13412646E-10	-6.24230623E-09	4.53776447E-04	*AMF	98			
202~*AMF	98	-2.03331504E-10				*AMF	99			
203~DMI		*MFLD	12		1			4.61171368E-09	*AMF	100
204~*AMF	100	-7.68552999E-10	5.16120810E-04	9.12445586E-09	-1.59512425E-09	*AMF	101			
205~*AMF	101	1.78609043E-03	1.31904123E-08	-2.21975394E-09	5.85342571E-03	*AMF	102			
206~*AMF	102	1.54446838E-08	-9.91517535E-10	2.01664321E-02	1.77526129E-08	*AMF	103			
207~*AMF	103	-2.31308883E-09	5.85983694E-03	1.82533775E-08	-1.81466464E-09	*AMF	104			
208~*AMF	104	1.80730480E-03	1.83165945E-08	-1.18863075E-09	5.80117805E-04	*AMF	105			
209~*AMF	105	1.82925532E-08	-7.51725793E-10	1.92549211E-04	1.82670874E-08	*AMF	106			
210~*AMF	106	-5.13412646E-10	7.04100676E-05	9.12943321E-09	-2.19979729E-10	*AMF	107			
211~*AMF	107	2.12144951E-05				*AMF	108			
212~DMI		*MFLD	13		1			2.58644257E-02	*AMF	109
213~*AMF	109	-2.88329072E-09	4.60591210E-09	5.22455387E-02	-5.64961056E-09	*AMF	110			
214~*AMF	110	9.19800414E-09	8.02032948E-02	-8.12668333E-09	1.36956544E-08	*AMF	111			
215~*AMF	111	1.12867534E-01	-9.96836391E-09	1.77526189E-08	1.61494017E-01	*AMF	112			
216~*AMF	112	-1.02517141E-08	2.00024033E-08	1.38034642E-01	-1.31368907E-08	*AMF	113			
217~*AMF	113	2.23090026E-08	1.30557060E-01	-1.44518175E-08	2.28110970E-08	*AMF	114			
218~*AMF	114	1.27836406E-01	-1.51032502E-08	2.28788011E-08	1.26804173E-01	*AMF	115			
219~*AMF	115	-1.54111248E-08	2.28637553E-08	6.32660985E-02	-1.05578722E-08	*AMF	116			
220~*AMF	116	1.18903145E-08				*AMF	117			
221~DMI		*MFLD	14		1			-2.88329072E-09	*AMF	118
222~*AMF	118	1.13540888E-03	-4.70962380E-10	-5.64961056E-09	2.77573429E-03	*AMF	119			
223~*AMF	119	-1.04369580E-09	-8.12668333E-09	5.76997921E-03	-1.75344161E-09	*AMF	120			
224~*AMF	120	-9.96836391E-09	1.21757165E-02	-2.31308883E-09	-1.02517141E-08	*AMF	121			
225~*AMF	121	2.85033807E-02	-1.05274056E-09	-1.31368907E-08	1.22777224E-02	*AMF	122			
226~*AMF	122	-2.36468889E-09	-1.44518175E-08	6.01378828E-03	-1.87588745E-09	*AMF	123			
227~*AMF	123	-1.51032502E-08	3.25673795E-03	-1.28196564E-09	-1.54111248E-08	*AMF	124			
228~*AMF	124	2.04296177E-03	-9.10043152E-10	-7.71066055E-09	8.47978052E-04	*AMF	125			
229~*AMF	125	-3.63987729E-10				*AMF	126			
230~DMI		*MFLD	15		1			4.60591210E-09	*AMF	127
231~*AMF	127	-4.70962380E-10	1.68953789E-04	9.19800414E-09	-1.04369580E-09	*AMF	128			
232~*AMF	128	5.72260236E-04	1.36956544E-08	-1.75344161E-09	1.80492387E-03	*AMF	129			
233~*AMF	129	1.77526189E-08	-2.31308883E-09	5.85983694E-03	2.00024033E-08	*AMF	130			
234~*AMF	130	-1.05274056E-09	2.01688185E-02	2.23090026E-08	-2.36468889E-09	*AMF	131			
235~*AMF	131	5.86128235E-03	2.28110970E-08	-1.87588745E-09	1.80968572E-03	*AMF	132			
236~*AMF	132	2.28788011E-08	-1.28196564E-09	5.86530892E-04	2.28637553E-08	*AMF	133			
237~*AMF	133	-9.10043152E-10	2.11382750E-04	1.14282166E-08	-3.95587119E-10	*AMF	134			
238~*AMF	134	6.32747397E-05				*AMF	135			
239~DMI		*MFLD	16		1			2.54706964E-02	*AMF	136
240~*AMF	136	-3.02422776E-09	4.58629046E-09	5.11574484E-02	-5.92463856E-09	*AMF	137			
241~*AMF	137	9.17711418E-09	7.74573684E-02	-8.79216699E-09	1.37602107E-08	*AMF	138			
242~*AMF	138	1.05380177E-01	-1.12892486E-08	1.82533775E-08	1.38034642E-01	*AMF	139			
243~*AMF	139	-1.31368907E-08	2.23090026E-08	1.86670899E-01	-1.34142830E-08	*AMF	140			
244~*AMF	140	2.45601264E-08	1.63246572E-01	-1.62794471E-08	2.68712093E-08	*AMF	141			
245~*AMF	141	1.55850053E-01	-1.75531696E-08	2.73822955E-08	1.53307020E-01	*AMF	142			
246~*AMF	142	-1.81274764E-08	2.74650915E-08	7.63343573E-02	-1.25338104E-08	*AMF	143			
247~*AMF	143	1.42942262E-08				*AMF	144			
248~DMI		*MFLD	17		1			-3.02422776E-09	*AMF	145
249~*AMF	145	6.07476337E-04	-2.75142797E-10	-5.98463856E-09	1.46727962E-03	*AMF	146			
250~*AMF	146	-6.29279961E-10	-8.79216699E-09	2.96523259E-03	-1.13703069E-09	*AMF	147			

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
251- *AMF 147	-1.12892486E-08	5.89188188E-03	-1.81466464E-09	-1.31368907E-08	*AMF 148					
252- *AMF 148	1.22777224E-02	-2.36468889E-09	-1.34142830E-08	2.86252871E-02	*AMF 149					
253- *AMF 149	-1.11396337E-09	-1.62794471E-08	1.24672204E-02	-2.45802378E-09	*AMF 150					
254- *AMF 150	-1.75531696E-08	6.34565949E-03	-2.03420503E-09	-1.81274764E-08	*AMF 151					
255- *AMF 151	3.86421406E-03	-1.55710844E-09	-9.07152042E-09	1.58918533E-03	*AMF 152					
256- *AMF 152	-6.33736841E-10				*AMF 153					
257- DMI	*MFLD	18	1		4.58629046E-09	*AMF 154				
258- *AMF 154	-2.75142797E-10	5.61394263E-05	9.17711418E-09	-6.29279961E-10	*AMF 155					
259- *AMF 155	1.87787344E-04	1.37602107E-08	-1.13703069E-09	5.78673324E-04	*AMF 156					
260- *AMF 156	1.82533775E-08	-1.81466464E-09	1.80730480E-03	2.23090026E-08	*AMF 157					
261- *AMF 157	-2.36468889E-09	5.86128235E-03	2.45601264E-08	-1.11396337E-09	*AMF 158					
262- *AMF 158	2.01712027E-02	2.68712093E-08	-2.45802378E-09	5.86769357E-03	*AMF 159					
263- *AMF 159	2.73822955E-08	-2.03420503E-09	1.82851939E-03	2.74650915E-08	*AMF 160					
264- *AMF 160	-1.55710844E-09	6.42670086E-04	1.37394203E-08	-6.94437174E-10	*AMF 161					
265- *AMF 161	1.90168255E-04				*AMF 162					
266- DMI	*MFLD	19	1		2.52529702E-02	*AMF 163				
267- *AMF 163	-3.10135118E-09	4.57119853E-09	5.06825671E-02	-6.16678264E-09	*AMF 164					
268- *AMF 164	9.14849707E-09	7.63342977E-02	-9.14720744E-09	1.37348337E-08	*AMF 165					
269- *AMF 165	1.02624536E-01	-1.19606938E-08	1.83165945E-08	1.30557060E-01	*AMF 166					
270- *AMF 166	-1.44518175E-08	2.28110970E-08	1.63246572E-01	-1.62794471E-08	*AMF 167					
271- *AMF 167	2.68712093E-08	2.11963892E-01	-1.65156315E-08	2.91313249E-08	*AMF 168					
272- *AMF 168	1.88717246E-01	-1.93036733E-08	3.14574997E-08	1.81714535E-01	*AMF 169					
273- *AMF 169	-2.04364596E-08	3.19882112E-08	9.00409818E-02	-1.43711354E-08	*AMF 170					
274- *AMF 170	1.66982410E-08				*AMF 171					
275- DMI	*MFLD	20	1		-3.10135118E-09	*AMF 172				
276- *AMF 172	3.31870979E-04	-1.58317554E-10	-6.16678264E-09	7.96974637E-04	*AMF 173					
277- *AMF 173	-3.68477693E-10	-9.14720744E-09	1.58918533E-03	-6.90502766E-10	*AMF 174					
278- *AMF 174	-1.19606938E-08	3.06723965E-03	-1.18863075E-09	-1.44518175E-08	*AMF 175					
279- *AMF 175	6.01378828E-03	-1.87588745E-09	-1.62794471E-08	1.24672204E-02	*AMF 176					
280- *AMF 176	-2.45802378E-09	-1.65156315E-08	2.89571583E-02	-1.27228055E-09	*AMF 177					
281- *AMF 177	-1.93036733E-08	1.30746961E-02	-2.73316658E-09	-2.04364596E-08	*AMF 178					
282- *AMF 178	7.48106837E-03	-2.50516741E-09	-1.02327782E-08	3.01623624E-03	*AMF 179					
283- *AMF 179	-1.05509002E-09				*AMF 180					
284- DMI	*MFLD	21	1		4.57119853E-09	*AMF 181				
285- *AMF 181	-1.58317554E-10	1.88335543E-05	9.14849707E-09	-3.68477693E-10	*AMF 182					
286- *AMF 182	6.25525427E-05	1.37348337E-08	-6.90502766E-10	1.90168270E-04	*AMF 183					
287- *AMF 183	1.83165945E-08	-1.18863075E-09	5.80117805E-04	2.28110970E-08	*AMF 184					
288- *AMF 184	-1.87588745E-09	1.80968572E-03	2.68712093E-08	-2.45802378E-09	*AMF 185					
289- *AMF 185	5.86769357E-03	2.91313249E-08	-1.27228055E-09	2.01900341E-02	*AMF 186					
290- *AMF 186	3.14574997E-08	-2.73316658E-09	5.92383370E-03	3.19882112E-08	*AMF 187					
291- *AMF 187	-2.50516741E-09	1.99747295E-03	1.60523754E-08	-1.17481624E-09	*AMF 188					
292- *AMF 188	5.79395331E-04				*AMF 189					
293- DMI	*MFLD	22	1		2.52118781E-02	*AMF 190				
294- *AMF 190	-3.14255666E-09	4.56220661E-09	5.04698716E-02	-6.26391738E-09	*AMF 191					
295- *AMF 191	9.12892162E-09	7.58497119E-02	-9.33530941E-09	1.37048808E-08	*AMF 192					
296- *AMF 192	1.01511240E-01	-1.23097728E-08	1.82925532E-08	1.27836406E-01	*AMF 193					
297- *AMF 193	-1.51032502E-08	2.28788011E-08	1.55850053E-01	-1.75531656E-08	*AMF 194					
298- *AMF 194	2.73822955E-08	1.88717246E-01	-1.93036733E-08	3.14574997E-08	*AMF 195					
299- *AMF 195	2.37828374E-01	-1.93989216E-08	3.37372370E-08	2.15492070E-01	*AMF 196					
300- *AMF 196	-2.19290612E-08	3.60692134E-08	1.05380177E-01	-1.59644848E-08	*AMF 197					

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

APRIL 11, 1974 NASTRAN 5/13/72

SCRIPTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
301- *AMF	197	1.90256237E-08								*AMF 198
302- DMI	*MFLD		23		1				-3.14255666E-09	*AMF 199
303- *AMF	199	1.87498416E-04	-9.33349370E-11	-6.26391738E-09	4.53776447E-04	*AMF 200				
304- *AMF	200	-2.19540483E-10	-9.33530941E-09	8.98981467E-04	-4.20077750E-10	*AMF 201				
305- *AMF	201	-1.23097728E-08	1.71109079E-03	-7.51725753E-10	-1.51032502E-08	*AMF 202				
306- *AMF	202	3.25673795E-03	-1.28196564E-09	-1.75531696E-08	6.34565949E-03	*AMF 203				
307- *AMF	203	-2.03420503E-09	-1.93036733E-08	1.30746961E-02	-2.73316658E-09	*AMF 204				
308- *AMF	204	-1.93989216E-08	3.00925672E-02	-1.74324311E-09	-2.19290612E-08	*AMF 205				
309- *AMF	205	1.52429529E-02	-3.50171936E-09	-1.10086411E-08	5.89188188E-03	*AMF 206				
310- *AMF	206	-1.60420499E-09				*AMF 207				
311- DMI	*MFLD		24		1				4.56220661E-09	*AMF 208
312- *AMF	208	-9.33349370E-11	6.41311362E-06	9.12892162E-09	-2.19540483E-10	*AMF 209				
313- *AMF	209	2.12144951E-05	1.37048808E-08	-4.20077750E-10	6.39969512E-05	*AMF 210				
314- *AMF	210	1.82925532E-08	-7.51725793E-10	1.92549211E-04	2.28788011E-08	*AMF 211				
315- *AMF	211	-1.28196564E-09	5.86530892E-04	2.73822955E-08	-2.03420503E-09	*AMF 212				
316- *AMF	212	1.82851939E-03	3.14574997E-08	-2.73316658E-09	5.92383370E-03	*AMF 213				
317- *AMF	213	3.37372370E-08	-1.74324311E-09	2.03585872E-02	3.60692134E-08	*AMF 214				
318- *AMF	214	-3.50171936E-09	6.43995404E-03	1.82969551E-08	-1.85204985E-09	*AMF 215				
319- *AMF	215	1.80730456E-03				*AMF 216				
320- DMI	*MFLD		25		1				2.51769051E-02	*AMF 217
321- *AMF	217	-3.16256843E-09	4.55771954E-09	5.03790267E-02	-6.31108321E-09	*AMF 218				
322- *AMF	218	9.11859033E-09	7.56467581E-02	-9.42648626E-09	1.26866412E-08	*AMF 219				
323- *AMF	219	1.01061583E-01	-1.24778659E-08	1.82670874E-08	1.26804173E-01	*AMF 220				
324- *AMF	220	-1.54111248E-08	2.28637553E-08	1.53307080E-01	-1.81274764E-08	*AMF 221				
325- *AMF	221	2.74650915E-08	1.81714535E-01	-2.04364596E-08	3.19882112E-08	*AMF 222				
326- *AMF	222	2.15492070E-01	-2.19290612E-08	3.60692134E-08	2.66874194E-01	*AMF 223				
327- *AMF	223	-2.15492070E-01	3.82557808E-08	1.25451088E-01	-1.71183174E-08	*AMF 224				
328- *AMF	224	2.09501430E-08				*AMF 225				
329- DMI	*MFLD		26		1				-3.16256843E-09	*AMF 226
330- *AMF	226	1.21935570E-04	-6.12229434E-11	-6.31108321E-09	2.91505363E-04	*AMF 227				
331- *AMF	227	-1.44935050E-10	-9.42648626E-09	5.75681916E-04	-2.80763413E-10	*AMF 228				
332- *AMF	228	-1.24778659E-08	1.08848000E-03	-5.13412646E-10	-1.54111248E-08	*AMF 229				
333- *AMF	229	2.04296177E-03	-9.10043152E-10	-1.81274764E-08	3.86421406E-03	*AMF 230				
334- *AMF	230	-1.55710844E-09	-2.04364596E-08	7.48106837E-03	-2.50516741E-09	*AMF 231				
335- *AMF	231	-2.19290612E-08	1.52429529E-02	-3.50171936E-09	-2.15490663E-08	*AMF 232				
336- *AMF	232	3.43952626E-02	-2.86740498E-09	-1.09703109E-08	1.22267194E-02	*AMF 233				
337- *AMF	233	-1.90214733E-09				*AMF 234				
338- DMI	*MFLD		27		1				4.55771954E-09	*AMF 235
339- *AMF	235	-6.12229434E-11	2.38793708E-06	9.11859033E-09	-1.44935050E-10	*AMF 236				
340- *AMF	236	7.85752854E-06	1.36866412E-08	-2.80763413E-10	2.35954358E-05	*AMF 237				
341- *AMF	237	1.82670874E-08	-5.13412646E-10	7.04107676E-05	2.28637553E-08	*AMF 238				
342- *AMF	238	-9.10043152E-10	2.11382750E-04	2.74650915E-08	-1.55710844E-09	*AMF 239				
343- *AMF	239	6.42570086E-04	3.19882112E-08	-2.50516741E-09	1.99747295E-03	*AMF 240				
344- *AMF	240	3.60692134E-08	-3.50171936E-09	6.43995404E-03	3.82557808E-08	*AMF 241				
345- *AMF	241	-2.66740498E-09	2.19761245E-02	2.01721200E-08	-2.46011589E-09	*AMF 242				
346- *AMF	242	5.86055964E-03				*AMF 243				
347- DMI	*MFLD		28		1				1.25835799E-02	*AMF 244
348- *AMF	244	-1.58183555E-09	2.27821051E-09	2.51769088E-02	-3.15676263E-09	*AMF 245				
349- *AMF	245	4.55777993E-09	3.77954580E-02	-4.71536410E-09	6.84057255E-09	*AMF 246				
350- *AMF	246	5.04698791E-02	-6.24230623E-09	9.12943321E-09	6.32660985E-02	*AMF 247				

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
351- *AMF	247	-7.71066055E-09	1.14282166E-08	7.63343573E-02	-9.07152042E-09	*AMF	248			
352- *AMF	248	1.37394203E-08	9.00409818E-02	-1.02327782E-08	1.60523754E-08	*AMF	249			
353- *AMF	249	1.05380177E-01	-1.10086411E-08	1.82969551E-08	1.25451088E-01	*AMF	250			
354- *AMF	250	-1.09703109E-08	2.01721200E-08	8.07470083E-02	-8.02946627E-09	*AMF	251			
355- *AMF	251	1.08360823E-08				*AMF	252			
356- DMI	*MFLD	29		1		-2.14254015E-09	*AMF	253		
357- *AMF	253	5.10035024E-05	-2.58151139E-11	-4.27954916E-09	1.21905570E-04	*AMF	254			
358- *AMF	254	-6.12724038E-11	-6.40362735E-09	2.40501904E-04	-1.19282903E-10	*AMF	255			
359- *AMF	255	-8.50303294E-09	4.53776447E-04	-2.19979729E-10	-1.05578728E-08	*AMF	256			
360- *AMF	256	8.47978052E-04	-3.95587119E-10	-1.25338104E-08	1.58918533E-03	*AMF	257			
361- *AMF	257	-6.94437174E-10	-1.43711354E-08	3.01623624E-03	-1.17481624E-09	*AMF	258			
362- *AMF	258	-1.59644848E-08	5.89188188E-03	-1.85204985E-09	-1.71183174E-08	*AMF	259			
363- *AMF	259	1.22267194E-02	-2.46011589E-09	-8.02946627E-09	1.42516978E-02	*AMF	260			
364- *AMF	260	-2.25891930E-10				*AMF	261			
365- DMI	*MFLD	30		1		2.37040809E-09	*AMF	262		
366- *AMF	262	-2.39782222E-11	7.22207631E-07	4.74222261E-09	-5.68684623E-11	*AMF	263			
367- *AMF	263	2.38093617E-06	7.11737158E-09	-1.10544240E-10	7.13532063E-06	*AMF	264			
368- *AMF	264	9.49877332E-09	-2.03331504E-10	2.12144951E-05	1.18903145E-08	*AMF	265			
369- *AMF	265	-3.63987729E-10	6.32747397E-05	1.42942262E-02	-6.33736841E-10	*AMF	266			
370- *AMF	266	1.90168255E-04	1.66982410E-08	-1.05509002E-09	5.79395331E-04	*AMF	267			
371- *AMF	267	1.90256237E-08	-1.60420499E-09	1.80730456E-03	2.09501430E-08	*AMF	268			
372- *AMF	268	-1.90214733E-09	5.86055964E-03	1.08360823E-08	-2.25891930E-10	*AMF	269			
373- *AMF	269	1.00844130E-02				*AMF	270			
374- DMI	PDU2	0	2	1	2	30	30	6APD	0	
375- DMI	*PDU2	1			1	1.78615928E-01	*APD	1		
376- *APD	1	5.23188142E-08	-5.44416601E-08	1.12713993E-01	2.13113509E-08	*APD	2			
377- *APD	2	-1.56585855E-08	9.24558640E-02	9.95564875E-09	-4.79478857E-09	*APD	3			
378- *APD	3	8.52270126E-02	5.01694686E-09	-1.53029167E-09	8.23292136E-02	*APD	4			
379- *APD	4	2.62712541E-09	-5.00945729E-10	8.10757279E-02	1.40558765E-09	*APD	5			
380- *APD	5	-1.66452699E-10	8.05100203E-02	7.67887975E-10	-5.58412760E-11	*APD	6			
381- *APD	6	8.02519321E-02	4.38464154E-10	-1.90147897E-11	8.01405907E-02	*APD	7			
382- *APD	7	2.82066814E-10	-7.05944764E-12	8.01095366E-02	2.36025199E-10	*APD	8			
383- *APD	8	-4.28267144E-12				*APD	9			
384- DMI	*PDU2	2		1		-2.27496812E-08	*APD	10		
385- *APD	10	1.44541204E-01	8.03613034E-08	-1.43559866E-08	5.88768981E-02	*APD	11			
386- *APD	11	2.31136390E-08	-1.17757786E-08	2.75044851E-02	7.07758829E-09	*APD	12			
387- *APD	12	-1.08550644E-08	1.38603263E-02	2.25886332E-09	-1.04859836E-08	*APD	13			
388- *APD	13	7.25796074E-03	7.39446060E-10	-1.03263353E-02	3.88321863E-03	*APD	14			
389- *APD	14	2.45700793E-10	-1.02542828E-08	2.12144526E-03	8.24273011E-11	*APD	15			
390- *APD	15	-1.02214059E-08	1.21134543E-03	2.80677426E-11	-1.02072271E-08	*APD	16			
391- *APD	16	7.79266469E-04	1.04204501E-11	-1.02032729E-02	6.52067130E-04	*APD	17			
392- *APD	17	6.32165067E-12				*APD	18			
393- DMI	*PDU2	3		1		3.23422036E-08	*APD	19		
394- *APD	19	-7.44992121E-08	1.18840098E-01	2.04092636E-02	-3.03462429E-08	*APD	20			
395- *APD	20	3.41809653E-02	1.67410974E-08	-1.41763188E-08	1.04664937E-02	*APD	21			
396- *APD	21	1.54321604E-08	-7.14386772E-09	3.34045757E-03	1.49074530E-08	*APD	22			
397- *APD	22	-3.74088671E-09	1.09350914E-03	1.46804879E-08	-2.00148276E-09	*APD	23			
398- *APD	23	3.63347819E-04	1.45780525E-08	-1.09343201E-09	1.21895340E-04	*APD	24			
399- *APD	24	1.45313130E-08	-6.24349905E-10	4.15071991E-05	1.45111549E-08	*APD	25			
400- *APD	25	-4.01648270E-10	1.54099835E-05	1.45055346E-08	-3.36087380E-10	*APD	26			



SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
401- *APD	26	9.34859872E-06								*APD 27
402- DMI	*PDU2		4		1			1.12713993E-01		*APD 28
403- *APD	28	2.13113509E-08	-1.56585855E-08	2.71071792E-01	6.22744096E-08	*APD 29				
404- *APD	29	-5.92364486E-08	1.97941005E-01	2.63282978E-08	-1.71888779E-08	*APD 30				
405- *APD	30	1.74785078E-01	1.25827739E-08	-5.29573185E-09	1.66302741E-01	*APD 31				
406- *APD	31	6.42253184E-09	-1.69674430E-09	1.62839234E-01	3.39501316E-09	*APD 32				
407- *APD	32	-5.56786839E-10	1.61327660E-01	1.84405158E-09	-1.85467489E-10	*APD 33				
408- *APD	33	1.60650611E-01	1.04995479E-09	-6.29007124E-11	1.60361469E-01	*APD 34				
409- *APD	34	6.74489353E-10	-2.32974612E-11	1.60281181E-01	5.64133629E-10	*APD 35				
410- *APD	35	-1.41188910E-11				*APD 36				
411- DMI	*PDU2		5		1			-1.43559866E-08		*APD 37
412- *APD	37	5.88768981E-02	2.31136390E-08	-3.45254598E-08	1.72045708E-01	*APD 38				
413- *APD	38	8.74388775E-08	-2.52110510E-08	7.27372169E-02	2.53725005E-08	*APD 39				
414- *APD	39	-2.22617622E-08	3.47624458E-02	7.81703235E-09	-2.11813962E-08	*APD 40				
415- *APD	40	1.77435428E-02	2.50456411E-09	-2.07402664E-08	9.37940553E-03	*APD 41				
416- *APD	41	8.21873236E-10	-2.05477377E-08	5.09456173E-03	2.73768341E-10	*APD 42				
417- *APD	42	-2.04615063E-08	2.90071149E-03	9.28477434E-11	-2.04246753E-08	*APD 43				
418- *APD	43	1.86341233E-03	3.43893941E-11	-2.04144506E-08	1.55853271E-03	*APD 44				
419- *APD	44	2.08408846E-11				*APD 45				
420- DMI	*PDU2		6		1			2.04092636E-08		*APD 46
421- *APD	46	-3.03462429E-08	3.41809653E-02	4.90832974E-08	-8.86755060E-08	*APD 47				
422- *APD	47	1.29306614E-01	3.58414205E-08	-3.74901106E-08	3.75214219E-02	*APD 48				
423- *APD	48	3.16485469E-08	-1.79172055E-08	1.15600042E-02	3.01126448E-08	*APD 49				
424- *APD	49	-9.14534937E-09	3.70380539E-03	2.94855056E-08	-4.83431961E-09	*APD 50				
425- *APD	50	1.21540460E-03	2.92117974E-08	-2.62583244E-09	4.04855004E-04	*APD 51				
426- *APD	51	2.90892075E-08	-1.49508028E-09	1.37305324E-04	2.90368476E-08	*APD 52				
427- *APD	52	-9.60437285E-10	5.18558005E-05	2.90223099E-08	-8.03296540E-10	*APD 53				
428- *APD	53	3.08199669E-05				*APD 54				
429- DMI	*PDU2		7		1			9.24558640E-02		*APD 55
430- *APD	55	9.95564875E-09	-4.79478857E-09	1.97941005E-01	2.63282978E-08	*APD 56				
431- *APD	56	-1.71888779E-08	3.53401005E-01	6.49015419E-08	-5.97373742E-08	*APD 57				
432- *APD	57	2.79016793E-01	2.77338827E-08	-1.73553296E-08	2.55295098E-01	*APD 58				
433- *APD	58	1.33506610E-08	-5.35157341E-09	2.46554673E-01	6.86099710E-09	*APD 59				
434- *APD	59	-1.71575909E-09	2.42979825E-01	3.67707997E-09	-5.63846303E-10	*APD 60				
435- *APD	60	2.41437197E-01	2.08007678E-09	-1.89750160E-10	2.40791202E-01	*APD 61				
436- *APD	61	1.33202160E-09	-6.99601627E-11	2.40613401E-01	1.11295329E-09	*APD 62				
437- *APD	62	-4.23122509E-11				*APD 63				
438- DMI	*PDU2		8		1			-1.17757786E-08		*APD 64
439- *APD	64	2.75044851E-02	7.07758829E-09	-2.52110510E-08	7.27372169E-02	*APD 65				
440- *APD	65	2.53725005E-08	-4.50114399E-08	1.79303646E-01	8.81783535E-08	*APD 66				
441- *APD	66	-3.55373828E-08	7.66204000E-02	2.56182027E-08	-3.25160414E-08	*APD 67				
442- *APD	67	3.68838906E-02	7.89945886E-09	-3.14028021E-08	1.89548880E-02	*APD 68				
443- *APD	68	2.53263188E-09	-3.09474899E-08	1.01586729E-02	8.32293567E-10	*APD 69				
444- *APD	69	-3.07510106E-08	5.74662909E-03	2.80090173E-10	-3.06687296E-08	*APD 70				
445- *APD	70	3.67997750E-03	1.03268186E-10	-3.06460812E-08	3.07475729E-03	*APD 71				
446- *APD	71	6.24571089E-11				*APD 72				
447- DMI	*PDU2		9		1			1.67410974E-08		*APD 73
448- *APD	73	-1.41763188E-08	1.04664937E-02	3.58414205E-08	-3.74901106E-08	*APD 74				
449- *APD	74	3.75214219E-02	6.39907398E-08	-9.24164283E-08	1.30400121E-01	*APD 75				
450- *APD	75	5.05219049E-08	-3.94915922E-08	3.78847681E-02	4.62265994E-08	*APD 76				

SORTED BULK DATA ECHO

CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
451-APD	76	-1.93106384E-08	1.16818994E-02	4.46439543E-02	-9.76969972E-09	APD	77				
452-APD	77	3.74531257E-03	4.39966570E-08	-5.23596810E-09	1.23081449E-03	APD	78				
453-APD	78	4.37173320E-08	-2.96191982E-09	4.14203620E-04	4.36003589E-08	APD	79				
454-APD	79	-1.89672855E-09	1.52715307E-04	4.35681571E-02	-1.56478697E-09	APD	80				
455-APD	80	9.23629705E-05				APD	81				
456-DMI	*PDU2		10	1	8.52270126E-02	APD	82				
457-APD	82	5.01694686E-09	-1.53029167E-09	1.74785078E-01	1.25827739E-08	APD	83				
458-APD	83	-5.29573185E-09	2.79016793E-01	2.77338827E-08	-1.73553296E-08	APD	84				
459-APD	84	4.33911026E-01	6.56694397E-08	-5.97931944E-02	3.59268665E-01	APD	85				
460-APD	85	2.81723480E-08	-1.73743437E-08	3.35435688E-01	1.36327287E-08	APD	86				
461-APD	86	-5.35863265E-09	3.26664209E-01	7.09702164E-05	-1.72004166E-09	APD	87				
462-APD	87	3.23120475E-01	3.95914412E-09	-5.70905767E-10	3.21689129E-01	APD	88				
463-APD	88	2.51854071E-09	-2.08764936E-10	3.21301281E-01	2.09990914E-09	APD	89				
464-APD	89	-1.25801397E-10				APD	90				
465-DMI	*PDU2		11	1	-1.02550644E-08	APD	91				
466-APD	91	1.38603263E-02	2.25886332E-09	-2.22617622E-08	3.47624458E-02	APD	92				
467-APD	92	7.81703235E-09	-3.55373828E-08	7.66204000E-02	2.56182027E-08	APD	93				
468-APD	93	-5.52657227E-08	1.81425095E-01	8.82607765E-08	-4.57587888E-08	APD	94				
469-APD	94	7.78317451E-02	2.56462691E-08	-4.27232649E-02	3.76631543E-02	APD	95				
470-APD	95	7.90987877E-09	-4.16060715E-08	1.96069553E-02	2.53895349E-09	APD	96				
471-APD	96	-4.11547134E-08	1.09379366E-02	8.42714121E-10	-4.09724130E-08	APD	97				
472-APD	97	6.95797428E-03	3.08157722E-10	-4.09230125E-02	5.20142066E-03	APD	98				
473-APD	98	1.85695431E-10				APD	99				
474-DMI	*PDU2		12	1	1.54321604E-08	APD	100				
475-APD	100	-7.14386772E-09	3.34045757E-03	3.16485469E-08	-1.79172055E-08	APD	101				
476-APD	101	1.15600042E-02	5.05219049E-08	-3.94915922E-08	3.78847681E-02	APD	102				
477-APD	102	7.85687462E-08	-9.35098683E-08	1.30522013E-01	6.50532002E-08	APD	103				
478-APD	103	-4.01159426E-08	3.79262753E-02	6.07377046E-02	-1.94122869E-08	APD	104				
479-APD	104	1.16973072E-02	5.91494889E-08	-1.01057864E-02	3.75466119E-03	APD	105				
480-APD	105	5.85078119E-08	-5.63761660E-09	1.24622439E-03	5.22486415E-08	APD	106				
481-APD	106	-3.58626950E-09	4.55710804E-04	5.81784114E-02	-2.99016034E-09	APD	107				
482-APD	107	2.74610473E-04				APD	108				
483-DMI	*PDU2		13	1	8.23292136E-02	APD	109				
484-APD	109	2.62712541E-09	-5.00945729E-10	1.66302741E-01	6.42253184E-09	APD	110				
485-APD	110	-1.69674430E-09	2.55295098E-01	1.33506610E-08	-5.35157341E-09	APD	111				
486-APD	111	3.59268665E-01	2.81723480E-08	-1.73743437E-02	5.14051616E-01	APD	112				
487-APD	112	6.59514967E-08	-5.98002430E-08	4.39372262E-01	2.84083725E-08	APD	113				
488-APD	113	-1.73786283E-08	4.15576279E-01	1.39147929E-08	-5.36569185E-09	APD	114				
489-APD	114	4.06916142E-01	7.53548690E-09	-1.73905645E-09	4.03630495E-01	APD	115				
490-APD	115	4.72703121E-09	-6.26747099E-10	4.02764916E-01	3.92412502E-09	APD	116				
491-APD	116	-3.75217413E-10				APD	117				
492-DMI	*PDU2		14	1	-1.04859836E-08	APD	118				
493-APD	118	7.25796074E-03	7.39446060E-10	-2.11813962E-02	1.77435422E-02	APD	119				
494-APD	119	2.50456411E-09	-3.25160414E-08	3.68838906E-02	7.29945866E-09	APD	120				
495-APD	120	-4.57587888E-08	7.78317451E-02	2.56462691E-08	-6.54729320E-08	APD	121				
496-APD	121	1.82204366E-01	8.82711788E-08	-5.59620581E-02	7.24838200E-02	APD	122				
497-APD	122	2.55525929E-08	-5.29304920E-08	3.84424217E-02	7.92029908E-09	APD	123				
498-APD	123	-5.18274774E-08	2.08182968E-02	2.56702126E-09	-5.14089962E-08	APD	124				
499-APD	124	1.30593814E-02	9.25141297E-10	-5.12987448E-02	1.08411908E-02	APD	125				
500-APD	125	5.53858515E-10				APD	126				

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

APRIL 11, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
501-DMI	*PDU2	15			1			1.49074530E-08	*APD	127
502-*APD	127	-3.74088671E-09	1.09350914E-03	3.01126448E-08	-9.14534937E-09	*APD	128			
503-*APD	128	3.70380539E-03	4.62265994E-08	-1.90106384E-08	1.16818994E-02	*APD	129			
504-*APD	129	6.50532002E-08	-4.01159426E-08	3.79262753E-02	9.30799047E-08	*APD	130			
505-*APD	130	-9.39114670E-08	1.30537391E-01	7.95587312E-08	-4.04520293E-08	*APD	131			
506-*APD	131	3.79356258E-02	7.52488631E-08	-1.98139354E-08	1.17127188E-02	*APD	132			
507-*APD	132	7.36807806E-08	-1.07301368E-08	3.79616814E-03	7.30858574E-08	*APD	133			
508-*APD	133	-6.73104594E-09	1.36811961E-03	7.29290832E-08	-5.58775071E-09	*APD	134			
509-*APD	134	8.19058390E-04								*APD 135
510-DMI	*PDU2	16			1			8.10757279E-02	*APD	136
511-*APD	136	1.40558765E-09	-1.66452699E-10	1.62839234E-01	3.39501316E-09	*APD	137			
512-*APD	137	-5.56786839E-10	2.46554673E-01	6.86099710E-09	-1.71575909E-09	*APD	138			
513-*APD	138	3.35435688E-01	1.36327287E-08	-5.35863265E-09	4.39378262E-01	*APD	139			
514-*APD	139	2.84083725E-08	-1.73786283E-08	5.94192207E-01	6.62335532E-08	*APD	140			
515-*APD	140	-5.98073484E-08	5.19630134E-01	2.88468378E-08	-1.73976424E-08	*APD	141			
516-*APD	141	4.96086359E-01	1.46826835E-08	-5.42153344E-05	4.67991869E-01	*APD	142			
517-*APD	142	8.94107188E-09	-1.90550908E-09	4.85959709E-01	7.35415639E-09	*APD	143			
518-*APD	143	-1.12769238E-09								*APD 144
519-DMI	*PDU2	17			1			-1.03263353E-08	*APD	145
520-*APD	145	3.88321863E-03	2.45700793E-10	-2.07402664E-08	9.37940553E-03	*APD	146			
521-*APD	146	8.21873236E-10	-3.14028021E-08	1.89548880E-02	2.53263188E-09	*APD	147			
522-*APD	147	-4.27232649E-08	3.76631543E-02	7.90987897E-09	-5.59620581E-08	*APD	148			
523-*APD	148	7.84838200E-02	2.56525929E-08	-7.56801342E-08	1.82983637E-01	*APD	149			
524-*APD	149	8.82815812E-08	-6.61834179E-08	7.96951652E-02	2.56806594E-08	*APD	150			
525-*APD	150	-6.31847570E-08	4.05638665E-02	8.00272915E-09	-6.21537879E-08	*APD	151			
526-*APD	151	2.47015134E-02	2.81272183E-09	-6.18949230E-08	2.03173421E-02	*APD	152			
527-*APD	152	1.66458691E-09								*APD 153
528-DMI	*PDU2	18			1			1.46804879E-08	*APD	154
529-*APD	154	-2.00148276E-09	3.63347819E-04	2.94855056E-08	-4.83431961E-09	*APD	155			
530-*APD	155	1.21540460E-03	4.46439543E-08	-9.76969972E-09	3.74531257E-03	*APD	156			
531-*APD	156	6.07377046E-08	-1.94122869E-08	1.16973072E-02	7.95587312E-08	*APD	157			
532-*APD	157	-4.04520293E-08	3.79356258E-02	1.07591063E-07	-9.43131226E-08	*APD	158			
533-*APD	158	1.30552828E-01	9.40900122E-08	-4.10763796E-08	3.79771329E-02	*APD	159			
534-*APD	159	8.98269263E-08	-2.09073683E-08	1.18346140E-02	8.83612756E-08	*APD	160			
535-*APD	160	-1.27316184E-08	4.15951386E-03	8.79932713E-08	-1.04719327E-08	*APD	161			
536-*APD	161	2.46162829E-03								*APD 162
537-DMI	*PDU2	19			1			8.05100203E-02	*APD	163
538-*APD	163	7.67887975E-10	-5.58412760E-11	1.61327660E-01	1.84405158E-09	*APD	164			
539-*APD	164	-1.85467489E-10	2.42979825E-01	3.67707997E-09	-5.63846303E-10	*APD	165			
540-*APD	165	3.26664209E-01	7.09702164E-09	-1.72004166E-09	4.15576279E-01	*APD	166			
541-*APD	166	1.39147929E-08	-5.36569189E-09	5.19630134E-01	2.88468378E-08	*APD	167			
542-*APD	167	-1.73976424E-08	6.74702287E-01	6.70014515E-08	-5.98631686E-08	*APD	168			
543-*APD	168	6.00705922E-01	3.02524228E-08	-1.75640942E-08	5.78415573E-01	*APD	169			
544-*APD	169	1.73098051E-08	-5.92248028E-09	5.73218882E-01	1.39580187E-08	*APD	170			
545-*APD	170	-3.43579964E-09								*APD 171
546-DMI	*PDU2	20			1			-1.02542828E-08	*APD	172
547-*APD	172	2.12144526E-03	8.24273011E-11	-2.05477377E-08	5.09456173E-03	*APD	173			
548-*APD	173	2.73768341E-10	-3.09474899E-08	1.01586729E-02	8.32293567E-10	*APD	174			
549-*APD	174	-4.16060715E-08	1.96069553E-02	2.53895349E-05	-5.29304920E-08	*APD	175			
550-*APD	175	3.84424217E-02	7.92029908E-09	-6.61834179E-08	7.96951652E-02	*APD	176			

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
551-APD 176	2.56806594E-08	-8.59344027E-08	1.85105085E-01	8.83640041E-08	APD 177					
552-APD 177	-7.65097639E-08	8.35784078E-02	2.59263579E-08	-7.36707193E-08	APD 178					
553-APD 178	4.78218235E-02	8.74217321E-09	-7.30088345E-08	3.25618359E-02	APD 179					
554-APD 179	5.07158049E-09				APD 180					
555-DMI *PDU2		21	1	1.45780525E-08	APD 181					
556-APD 181	-1.09343201E-09	1.21895340E-04	2.92117974E-08	-2.62583244E-09	APD 182					
557-APD 182	4.04855004E-04	4.39966570E-08	-5.23596810E-09	1.23081449E-03	APD 183					
558-APD 183	5.91494889E-08	-1.01057864E-08	3.75466119E-03	7.52488631E-08	APD 184					
559-APD 184	-1.98139354E-08	1.17127188E-02	9.40900122E-08	-4.10763796E-08	APD 185					
560-APD 185	3.79771329E-02	1.22169126E-07	-9.54065627E-08	1.30674720E-01	APD 186					
561-APD 186	1.08770507E-07	-4.30778613E-08	3.83404791E-02	1.04734397E-07	APD 187					
562-APD 187	-2.46482550E-08	1.29281208E-02	1.03793411E-07	-1.98754826E-08	APD 188					
563-APD 188	7.49997050E-03				APD 189					
564-DMI *PDU2		22	1	8.02519321E-02	APD 190					
565-APD 190	4.38464154E-10	-1.90147897E-11	1.60650611E-01	1.04995479E-09	APD 191					
566-APD 191	-6.29007124E-11	2.41437197E-01	2.08007678E-09	-1.89750160E-10	APD 192					
567-APD 192	3.23120475E-01	3.95914412E-09	-5.70905767E-10	4.06916142E-01	APD 193					
568-APD 193	7.53548690E-09	-1.73905645E-09	4.96086359E-01	1.46826835E-08	APD 194					
569-APD 194	-5.42153344E-09	6.00705922E-01	3.02524228E-08	-1.75640942E-08	APD 195					
570-APD 195	7.57031500E-01	6.96285838E-08	-6.03641297E-08	6.85932934E-01	APD 196					
571-APD 196	3.52693696E-08	-1.90943830E-08	6.70871437E-01	2.72654503E-08	APD 197					
572-APD 197	-1.07172653E-08				APD 198					
573-DMI *PDU2		23	1	-1.02214056E-08	APD 199					
574-APD 199	1.21134543E-03	2.80677426E-11	-2.04615063E-08	2.90071149E-03	APD 200					
575-APD 200	9.28477434E-11	-3.07510106E-08	5.74662909E-03	2.80090173E-10	APD 201					
576-APD 201	-4.11547134E-08	1.09379366E-02	8.42714121E-10	-5.18274774E-08	APD 202					
577-APD 202	2.08182968E-02	2.56702126E-09	-6.31847570E-08	4.05638665E-02	APD 203					
578-APD 203	8.00272915E-09	-7.65097639E-08	8.35784078E-02	2.59263579E-08	APD 204					
579-APD 204	-9.64204219E-08	1.92363024E-01	8.91034801E-08	-8.73648105E-08	APD 205					
580-APD 205	9.74386930E-02	2.81852195E-08	-8.54465156E-08	7.53262639E-02	APD 206					
581-APD 206	1.58197579E-08				APD 207					
582-DMI *PDU2		24	1	1.45313130E-08	APD 208					
583-APD 208	-6.24349905E-10	4.15071991E-05	2.90892075E-08	-1.49508028E-09	APD 209					
584-APD 209	1.37305324E-04	4.37173320E-08	-2.96191582E-09	4.14203620E-04	APD 210					
585-APD 210	5.85078119E-08	-5.63761660E-09	1.24622439E-03	7.36807806E-08	APD 211					
586-APD 211	-1.07301368E-08	3.79616814E-03	8.98269263E-08	-2.09073683E-08	APD 212					
587-APD 212	1.18346140E-02	1.08770507E-07	-4.30778613E-08	3.83404791E-02	APD 213					
588-APD 213	1.37076597E-07	-9.91474849E-08	1.31768227E-01	1.24202700E-07	APD 214					
589-APD 214	-5.02217254E-08	4.16809320E-02	1.21475466E-07	-3.88245667E-08	APD 215					
590-APD 215	2.33946107E-02				APD 216					
591-DMI *PDU2		25	1	8.01405907E-02	APD 217					
592-APD 217	2.82066814E-10	-7.05944764E-12	1.60361469E-01	6.74489353E-10	APD 218					
593-APD 218	-2.32974612E-11	2.40791202E-01	1.33202160E-09	-6.99601627E-11	APD 219					
594-APD 219	3.21689129E-01	2.51854071E-09	-2.08764936E-10	4.03630495E-01	APD 220					
595-APD 220	4.72703121E-09	-6.26747099E-10	4.87991869E-01	8.94107188E-09	APD 221					
596-APD 221	-1.90550908E-09	5.78415573E-01	1.73098051E-08	-5.92248028E-09	APD 222					
597-APD 222	6.85932934E-01	3.52693696E-08	-1.90943830E-08	8.49487364E-01	APD 223					
598-APD 223	7.95842539E-08	-6.51588721E-08	7.98646927E-01	5.65807099E-08	APD 224					
599-APD 224	-3.47529614E-08				APD 225					
600-DMI *PDU2		26	1	-1.02072271E-08	APD 226					

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

APRIL 11, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
601-*	APD	226	7.79266469E-04	1.04204501E-11	-2.04246753E-08	1.86341233E-03	*APD	227		
602-*	APD	227	3.43893941E-11	-3.06687298E-08	3.67997750E-03	1.03268186E-10	*APD	228		
603-*	APD	228	-4.09724130E-08	6.95797428E-03	3.08157722E-10	-5.14089962E-08	*APD	229		
604-*	APD	229	1.30593814E-02	9.25141297E-10	-6.21537879E-08	2.47015134E-02	*APD	230		
605-*	APD	230	2.81272183E-09	-7.36707193E-08	4.78218235E-02	8.74217321E-09	*APD	231		
606-*	APD	231	-8.73648105E-08	9.74386930E-02	2.81852195E-08	-1.08196161E-07	*APD	232		
607-*	APD	232	2.19867527E-01	9.61810542E-08	-1.01720843E-07	1.56315565E-01	*APD	233		
608-*	APD	233	5.12988443E-08				*APD	234		
609-DMI		*PDU2		27	1		1.45111549E-08	*APD	235	
610-*	APD	235	-4.01648270E-10	1.54099835E-05	2.90368476E-08	-9.60437285E-10	*APD	236		
611-*	APD	236	5.08558005E-05	4.36003589E-08	-1.89672855E-09	1.52715307E-04	*APD	237		
612-*	APD	237	5.82486415E-08	-3.58626950E-09	4.55710804E-04	7.30858574E-08	*APD	238		
613-*	APD	238	-6.73104594E-09	1.36811961E-03	8.83612756E-08	-1.27316184E-08	*APD	239		
614-*	APD	239	4.15951386E-03	1.04734397E-07	-2.46482550E-08	1.29281208E-02	*APD	240		
615-*	APD	240	1.24202700E-07	-5.02217254E-08	4.16809320E-02	1.53817666E-07	*APD	241		
616-*	APD	241	-1.13323779E-07	1.42234683E-01	1.44611931E-07	-8.05679292E-08	*APD	242		
617-*	APD	242	7.58618712E-02				*APD	243		
618-DMI		*PDU2		28	1		4.00547944E-02	*APD	244	
619-*	APD	244	1.33540595E-10	-2.02863334E-12	8.01405907E-02	3.19180682E-10	*APD	245		
620-*	APD	245	-6.68789503E-12	1.20306730E-01	6.29697183E-10	-2.00426481E-11	*APD	246		
621-*	APD	246	1.60650671E-01	1.18810650E-09	-5.95901245E-11	2.01382458E-01	*APD	247		
622-*	APD	247	2.22023022E-09	-1.77734605E-10	2.42979884E-01	4.16090273E-09	*APD	248		
623-*	APD	248	-5.34170042E-10	2.86609471E-01	7.89729881E-09	-1.62748353E-09	*APD	249		
624-*	APD	249	3.35435748E-01	1.54265045E-08	-5.07660047E-09	3.99323523E-01	*APD	250		
625-*	APD	250	3.20127711E-08	-1.64619287E-08	5.14051735E-01	7.46293267E-08	*APD	251		
626-*	APD	251	-5.66529046E-08				*APD	252		
627-DMI		*PDU2		29	1		-6.87868251E-09	*APD	253	
628-*	APD	253	3.26033449E-04	3.06413835E-12	-1.37626941E-08	7.79266469E-04	*APD	254		
629-*	APD	254	1.01016938E-11	-2.06604973E-08	1.53737888E-03	3.02732978E-11	*APD	255		
630-*	APD	255	-2.75888361E-08	2.90071149E-03	9.00075847E-11	-3.45837883E-08	*APD	256		
631-*	APD	256	5.42059541E-03	2.68458145E-10	-4.17273895E-08	1.01586729E-02	*APD	257		
632-*	APD	257	8.06834155E-10	-4.92199810E-08	1.92809217E-02	2.45822407E-09	*APD	258		
633-*	APD	258	-5.76050070E-08	3.76631580E-02	7.66792141E-09	-6.85765258E-08	*APD	259		
634-*	APD	259	7.81577826E-02	2.48648284E-08	-8.82790232E-08	1.82204425E-01	*APD	260		
635-*	APD	260	8.55710596E-08				*APD	261		
636-DMI		*PDU2		30	1		7.54629781E-09	*APD	262	
637-*	APD	262	-1.56397770E-10	4.67430073E-06	1.50984434E-08	-3.73812759E-10	*APD	263		
638-*	APD	263	1.54099835E-05	2.26657129E-08	-7.37477857E-10	4.61814925E-05	*APD	264		
639-*	APD	264	3.02664880E-08	-1.39146605E-09	1.37305309E-04	3.79403389E-08	*APD	265		
640-*	APD	265	-2.60025090E-09	4.09529079E-04	4.57772664E-08	-4.87309748E-09	*APD	266		
641-*	APD	266	1.23081426E-03	5.39970593E-08	-9.24902110E-09	3.74998641E-03	*APD	267		
642-*	APD	267	6.31958983E-08	-1.80669488E-08	1.16973072E-02	7.52322649E-08	*APD	268		
643-*	APD	268	-3.74921640E-08	3.79309468E-02	9.68470317E-08	-8.74031230E-08	*APD	269		
644-*	APD	269	1.30537450E-01				*APD	270		
645-DMI		TU12	0	2	1	2	15	30	6ATU	0
646-DMI		*TU12		1		1		-1.69992805E-01	*ATU	1
647-*	ATU	1	-6.53458869E-08	-7.94370294E-08	-1.74978077E-01	4.56155472E-08	*ATU	2		
648-*	ATU	2	-8.09579319E-08	-2.44192898E-01	6.51131700E-08	-1.07940593E-07	*ATU	3		
649-*	ATU	3	-4.15904641E-01	6.76216132E-08	-1.56354929E-07	-8.77412558E-01	*ATU	4		
650-*	ATU	4	7.80204346E-08	-2.38857353E-07			*ATU	5		

SORTED BULK DATA ECHO

CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
651-DMI	*TU12	2							2.18358203E-08	*ATU	6
652-ATU	6	9.58415912E-04	1.18971766E-09	2.65904170E-08	-2.56741680E-02	*ATU	7				
653-ATU	7	1.93318144E-08	4.79086353E-08	-8.57254267E-02	4.63720617E-08	*ATU	8				
654-ATU	8	9.81684138E-08	-2.42767751E-01	8.17950649E-08	2.42849524E-07	*ATU	9				
655-ATU	9	-6.98323548E-01	1.13016938E-07			*ATU	10				
656-DMI	*TU12	3							-3.01365191E-08	*ATU	11
657-ATU	11	-2.66084488E-09	2.85030296E-03	-3.14193720E-08	1.23995001E-08	*ATU	12				
658-ATU	12	1.16847618E-03	-4.92969683E-08	5.92054654E-08	-2.14229114E-02	*ATU	13				
659-ATU	13	-1.06516609E-07	2.08539859E-07	-1.23851180E-01	-3.09364793E-07	*ATU	14				
660-ATU	14	7.34759794E-07	-5.48023820E-01			*ATU	15				
661-DMI	*TU12	4							-2.56080705E-01	*ATU	16
662-ATU	16	-1.14026705E-07	-1.36756228E-07	-2.85390079E-01	8.58086651E-08	*ATU	17				
663-ATU	17	-1.31515037E-07	-3.45734298E-01	1.06588800E-07	-1.60320951E-07	*ATU	18				
664-ATU	18	-4.45234716E-01	1.03763909E-07	-1.99007843E-07	-5.53683519E-01	*ATU	19				
665-ATU	19	1.06212781E-07	-2.37836446E-07			*ATU	20				
666-DMI	*TU12	5							3.79191967E-08	*ATU	21
667-ATU	21	1.08317728E-03	1.59774333E-10	4.11064143E-08	-2.83775739E-02	*ATU	22				
668-ATU	22	2.10037285E-08	6.00306862E-08	-8.15893412E-02	4.84767497E-08	*ATU	23				
669-ATU	23	8.89549483E-08	-1.73212349E-01	7.51426796E-08	1.23696509E-07	*ATU	24				
670-ATU	24	-2.83256173E-01	9.08859761E-08			*ATU	25				
671-DMI	*TU12	6							-5.32795923E-08	*ATU	26
672-ATU	26	-1.67522130E-09	1.46920094E-03	-5.15055625E-08	1.40887373E-08	*ATU	27				
673-ATU	27	7.53710745E-04	-6.59152306E-08	5.18466940E-08	-1.39681995E-02	*ATU	28				
674-ATU	28	-9.66321068E-08	1.32075911E-07	-6.35478497E-02	-1.43006673E-07	*ATU	29				
675-ATU	29	2.52475331E-07	-1.55679464E-01			*ATU	30				
676-DMI	*TU12	7							-3.74758601E-01	*ATU	31
677-ATU	31	-1.44523312E-07	-1.72530179E-07	-3.44076931E-01	1.02084919E-07	*ATU	32				
678-ATU	32	-1.58305227E-07	-3.81478608E-01	1.29978844E-07	-1.81004680E-07	*ATU	33				
679-ATU	33	-4.28499937E-01	1.23733969E-07	-2.07947210E-07	-4.54169691E-01	*ATU	34				
680-ATU	34	1.23443726E-07	-2.31939623E-07			*ATU	35				
681-DMI	*TU12	8							4.78912590E-08	*ATU	36
682-ATU	36	8.29251250E-04	-2.16874449E-10	4.74146873E-08	-2.14195214E-02	*ATU	37				
683-ATU	37	1.57082845E-08	5.95369904E-08	-5.58494627E-02	3.52916238E-08	*ATU	38				
684-ATU	38	7.33342631E-08	-1.00755811E-01	5.15858538E-08	8.26270252E-08	*ATU	39				
685-ATU	39	-1.32003367E-01	5.94559388E-08			*ATU	40				
686-DMI	*TU12	9							-6.77171101E-08	*ATU	41
687-ATU	41	-9.01174912E-10	6.23160973E-04	-6.22223979E-08	1.07876552E-08	*ATU	42				
688-ATU	42	3.53835989E-04	-7.06029368E-08	3.33038983E-08	-6.44360483E-03	*ATU	43				
689-ATU	43	-8.39685868E-08	6.89827857E-08	-2.53177881E-02	-9.52150572E-08	*ATU	44				
690-ATU	44	1.00361660E-07	-4.72604670E-02			*ATU	45				
691-DMI	*TU12	10							-4.15153631E-01	*ATU	46
692-ATU	46	-1.61784556E-07	-1.92758023E-07	-3.73153269E-01	1.20630887E-07	*ATU	47				
693-ATU	47	-1.71572879E-07	-3.93532634E-01	1.42695740E-07	-1.88587137E-07	*ATU	48				
694-ATU	48	-4.14906681E-01	1.34973220E-07	-2.08345057E-07	-4.18659508E-01	*ATU	49				
695-ATU	49	1.33787410E-07	-2.26890222E-07			*ATU	50				
696-DMI	*TU12	11							5.34898525E-08	*ATU	51
697-ATU	51	5.39066503E-04	-2.54483545E-10	4.98411303E-08	-1.38026811E-02	*ATU	52				
698-ATU	52	1.00653743E-08	5.67548817E-08	-3.38278338E-02	2.22703243E-08	*ATU	53				
699-ATU	53	6.32082902E-08	-5.56646660E-02	3.17056461E-08	6.57962005E-08	*ATU	54				
700-ATU	54	-6.64411783E-02	3.58671350E-08			*ATU	55				

SORTED BULK DATA ECHO

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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
701-DMI *TUI2 12 1 -7.58429906E-08 *ATU 56
702-ATU 56 -4.58221239E-10 2.37231143E-04 -6.75348133E-08 7.01167835E-09*ATU 57
703-ATU 57 1.43702666E-04 -7.18693514E-08 1.92447764E-08 -2.58036540E-03*ATU 58
704-ATU 58 -7.74575142E-08 3.49179459E-08 -9.24630463E-03 -7.99266786E-08*ATU 59
705-ATU 59 4.45056507E-08 -1.50015876E-02 *ATU 60
706-DMI *TUI2 13 1 -4.42730427E-01 *ATU 61
707-ATU 61 -1.70973919E-07 -2.03524905E-07 -3.87164593E-01 1.27367002E-07*ATU 62
708-ATU 62 -1.77971685E-07 -3.97632957E-01 1.49531672E-07 -1.91305958E-07*ATU 63
709-ATU 63 -4.07383442E-01 1.41330304E-07 -2.07236837E-07 -4.04424787E-01*ATU 64
710-ATU 64 1.39883696E-07 -2.23572044E-07 *ATU 65
711-DMI *TUI2 14 1 5.64511602E-08 *ATU 66
712-ATU 66 3.22924461E-04 -1.90480770E-10 5.06905877E-08 -8.22463259E-03*ATU 67
713-ATU 67 5.97638206E-09 5.44489751E-08 -1.94023177E-02 1.31239091E-08*ATU 68
714-ATU 68 5.75337751E-08 -3.03312577E-02 1.84845490E-08 5.80380615E-08*ATU 69
715-ATU 69 -3.47727127E-02 2.07705320E-08 *ATU 70
716-DMI *TUI2 15 1 -8.01463216E-08 *ATU 71
717-ATU 71 -2.31736977E-10 8.58500280E-05 -7.00920850E-08 4.20054391E-09*ATU 72
718-ATU 72 5.41246263E-05 -7.22279196E-08 1.06746150E-08 -9.61648067E-04*ATU 73
719-ATU 73 -7.45846478E-08 1.78230337E-08 -3.25128413E-03 -7.45738475E-08*ATU 74
720-ATU 74 2.12705373E-08 -4.89497930E-03 *ATU 75
721-DMI *TUI2 16 1 -4.54785228E-01 *ATU 76
722-ATU 76 -1.75682089E-07 -2.09040024E-07 -3.93851578E-01 1.30888793E-07*ATU 77
723-ATU 77 -1.81029293E-07 -3.99081230E-01 1.53190342E-07 -1.92287075E-07*ATU 78
724-ATU 78 -4.03595984E-01 1.44913599E-07 -2.06271409E-07 -3.98267329E-01*ATU 79
725-ATU 79 1.43416401E-07 -2.21632718E-07 *ATU 80
726-DMI *TUI2 17 1 5.79601291E-08 *ATU 81
727-ATU 81 1.85694924E-04 -1.22482621E-10 5.09538474E-08 -4.71456721E-03*ATU 82
728-ATU 82 3.41804873E-09 5.29606226E-08 -1.08698085E-02 7.48385176E-09*ATU 83
729-ATU 83 5.44800542E-08 -1.65195614E-02 1.05055804E-08 5.42176330E-08*ATU 84
730-ATU 84 -1.85996480E-02 1.17827028E-08 *ATU 85
731-DMI *TUI2 18 1 -8.23416713E-08 *ATU 86
732-ATU 86 -1.18702201E-10 3.02016124E-05 -7.13107511E-08 2.41607068E-09*ATU 87
733-ATU 87 1.95277244E-05 -7.23437665E-08 5.84402926E-09 -3.44428699E-04*ATU 88
734-ATU 88 -7.33625143E-08 9.27069976E-09 -1.12278201E-03 -7.25605673E-08*ATU 89
735-ATU 89 1.06970397E-08 -1.62348244E-03 *ATU 90
736-DMI *TUI2 19 1 -4.60786581E-01 *ATU 91
737-ATU 91 -1.78030291E-07 -2.11789256E-07 -3.97028327E-01 1.32697153E-07*ATU 92
738-ATU 92 -1.82483575E-07 -3.99620175E-01 1.55135865E-07 -1.92649452E-07*ATU 93
739-ATU 93 -4.01753068E-01 1.46910224E-07 -2.05665344E-07 -3.95488381E-01*ATU 94
740-ATU 94 1.45423598E-07 -2.20575544E-07 *ATU 95
741-DMI *TUI2 20 1 5.87090625E-08 *ATU 96
742-ATU 96 1.05495579E-04 -7.40951189E-11 5.10162828E-08 -2.67342920E-03*ATU 97
743-ATU 97 1.93540139E-09 5.20904173E-08 -6.08104095E-03 4.23547419E-09*ATU 98
744-ATU 98 5.28640278E-08 -9.1000876E-03 5.94527449E-09 5.22793044E-08*ATU 99
745-ATU 99 -1.01599619E-02 6.66802080E-09 *ATU 100
746-DMI *TUI2 21 1 -8.34327807E-08 *ATU 101
747-ATU 101 -6.23653906E-11 1.04690889E-05 -7.18888487E-08 1.37305389E-09*ATU 102
748-ATU 102 6.87701959E-06 -7.23883318E-08 3.21894400E-09 -1.20705357E-04*ATU 103
749-ATL 103 -7.28427949E-08 4.94939911E-09 -3.84650426E-04 -7.17609510E-08*ATU 104
750-ATU 104 5.60878988E-09 -5.44076087E-04 *ATU 105

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APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

SORTED BULK DATA ECHO

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CARD
COUNT .1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
751- DMI      *TU12      22      1      -4.63685215E-01 *ATU 106
752- *ATU 106 -1.79166364E-07 -2.13118369E-07 -3.98516715E-01 1.33601930E-07*ATU 107
753- *ATU 107 -1.83165639E-07 -3.99830520E-01 1.56147109E-07 -1.92786899E-07*ATU 108
754- *ATU 108 -4.00879323E-01 1.47988999E-07 -2.05333151E-07 -3.94220412E-01*ATU 109
755- *ATU 109 1.46523348E-07 -2.20032007E-07      *ATU 110
756- DMI      *TU12      23      1      5.90697979E-08 *ATU 111
757- *ATU 111 6.15481113E-05 -4.48905496E-11 5.10188656E-08 -1.55803584E-03*ATU 112
758- *ATU 112 1.12685350E-09 5.16143395E-08 -3.51606798E-03 2.46764764E-09*ATU 113
759- *ATU 113 5.20298649E-08 -5.21713868E-03 3.46802831E-09 5.12994944E-08*ATU 114
760- *ATU 114 -5.80099225E-03 3.89208665E-09      *ATU 115
761- DMI      *TU12      24      1      -8.39592076E-08 *ATU 116
762- *ATU 116 -3.45174167E-11 3.63309027E-06 -7.21593096E-08 8.01345656E-10*ATU 117
763- *ATU 117 2.41035650E-06 -7.24077722E-08 1.84184401E-09 -4.21711593E-05*ATU 118
764- *ATU 118 -7.26210487E-08 2.77827938E-09 -1.32504298E-04 -7.14327939E-08*ATU 119
765- *ATU 119 3.11660941E-09 -1.85157551E-04      *ATU 120
766- DMI      *TU12      25      1      -4.64975417E-01 *ATU 121
767- *ATU 121 -1.79672725E-07 -2.13710337E-07 -3.99167240E-01 1.34018137E-07*ATU 122
768- *ATU 122 -1.83463897E-07 -3.99911940E-01 1.56627777E-07 -1.92838172E-07*ATU 123
769- *ATU 123 -4.00495172E-01 1.48516563E-07 -2.05174331E-07 -3.93673599E-01*ATU 124
770- *ATU 124 1.47066203E-07 -2.19779963E-07      *ATU 125
771- DMI      *TU12      26      1      5.92299898E-08 *ATU 126
772- *ATU 126 4.00548161E-05 -2.98809449E-11 5.10104030E-08 -1.01333461E-03*ATU 127
773- *ATU 127 7.32460981E-10 5.13817362E-08 -2.27672490E-03 1.60557057E-09*ATU 128
774- *ATU 128 5.16357268E-08 -3.36289173E-03 2.25971553E-09 5.08413756E-08*ATU 129
775- *ATU 129 -3.73170897E-03 2.53781707E-09      *ATU 130
776- DMI      *TU12      27      1      -8.41933456E-08 *ATU 131
777- *ATU 131 -2.17147272E-11 1.36434301E-06 -7.22774871E-08 5.21665822E-10*ATU 132
778- *ATU 132 9.11016571E-07 -7.24162987E-08 1.18464660E-09 -1.59047486E-05*ATU 133
779- *ATU 133 -7.25306109E-08 1.76667725E-09 -4.95233689E-05 -7.13017658E-08*ATU 134
780- *ATU 134 1.97041983E-09 -6.87181455E-05      *ATU 135
781- DMI      *TU12      28      1      -2.32670188E-01 *ATU 136
782- *ATU 136 -8.99072461E-08 -1.06938899E-07 -1.99674845E-01 6.70488589E-08*ATU 137
783- *ATU 137 -9.17738134E-08 -1.99966729E-01 7.83391556E-08 -9.64258220E-08*ATU 138
784- *ATU 138 -2.00193584E-01 7.42700763E-08 -1.02564343E-07 -1.96760595E-01*ATU 139
785- *ATU 139 7.35402637E-08 -1.09854113E-07      *ATU 140
786- DMI      *TU12      29      1      3.99601241E-08 *ATU 141
787- *ATU 141 1.68243278E-05 -1.26588722E-11 3.43618716E-08 -4.25543403E-04*ATU 142
788- *ATU 142 3.07522230E-10 3.45278188E-08 -9.54627758E-04 6.74544198E-10*ATU 143
789- *ATU 143 3.46417295E-08 -1.40788918E-03 9.50190371E-10 3.40831612E-08*ATU 144
790- *ATU 144 -1.56127731E-03 1.06756182E-09      *ATU 145
791- DMI      *TU12      30      1      -4.38348309E-08 *ATU 146
792- *ATU 146 -8.40378114E-12 4.15984232E-07 -3.76185589E-08 2.03946401E-10*ATU 147
793- *ATU 147 2.78612731E-07 -3.76747700E-08 4.61354954E-10 -4.85905184E-06*ATU 148
794- *ATU 148 -3.77201523E-08 6.85522750E-10 -1.50657806E-05 -3.70752993E-08*ATU 149
795- *ATU 149 7.63210606E-10 -2.08410784E-05      *ATU 150
796- EIGR      1      GIV      0.0      10.64      25      25      0      .0      6EIG
797- 6EIG      MAX
798- GRID      2      1      1.0000      .0000      1.0000      1
799- GRID      3      1      1.0000      9.0000      1.0000      1
800- GRID      4      1      1.0000      18.0000      1.0000      1

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APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
801- GRID	5	1		1.0000	27.0000	1.0000	1			
802- GRID	6	1		1.0000	36.0000	1.0000	1			
803- GRID	7	1		1.0000	45.0000	1.0000	1			
804- GRID	8	1		1.0000	54.0000	1.0000	1			
805- GRID	9	1		1.0000	63.0000	1.0000	1			
806- GRID	10	1		1.0000	72.0000	1.0000	1			
807- GRID	11	1		1.0000	81.0000	1.0000	1			
808- GRID	12	1		1.0000	90.0000	1.0000	1			
809- GRID	13	1		1.0000	.0000	.8000	1			
810- GRID	14	1		1.0000	9.0000	.8000	1			
811- GRID	15	1		1.0000	18.0000	.8000	1			
812- GRID	16	1		1.0000	27.0000	.8000	1			
813- GRID	17	1		1.0000	36.0000	.8000	1			
814- GRID	18	1		1.0000	45.0000	.8000	1			
815- GRID	19	1		1.0000	54.0000	.8000	1			
816- GRID	20	1		1.0000	63.0000	.8000	1			
817- GRID	21	1		1.0000	72.0000	.8000	1			
818- GRID	22	1		1.0000	81.0000	.8000	1			
819- GRID	23	1		1.0000	90.0000	.8000	1			
820- GRID	24	1		1.0000	.0000	.6000	1			
821- GRID	25	1		1.0000	9.0000	.6000	1			
822- GRID	26	1		1.0000	18.0000	.6000	1			
823- GRID	27	1		1.0000	27.0000	.6000	1			
824- GRID	28	1		1.0000	36.0000	.6000	1			
825- GRID	29	1		1.0000	45.0000	.6000	1			
826- GRID	30	1		1.0000	54.0000	.6000	1			
827- GRID	31	1		1.0000	63.0000	.6000	1			
828- GRID	32	1		1.0000	72.0000	.6000	1			
829- GRID	33	1		1.0000	81.0000	.6000	1			
830- GRID	34	1		1.0000	90.0000	.6000	1			
831- GRID	35	1		1.0000	.0000	.4000	1			
832- GRID	36	1		1.0000	9.0000	.4000	1			
833- GRID	37	1		1.0000	18.0000	.4000	1			
834- GRID	38	1		1.0000	27.0000	.4000	1			
835- GRID	39	1		1.0000	36.0000	.4000	1			
836- GRID	40	1		1.0000	45.0000	.4000	1			
837- GRID	41	1		1.0000	54.0000	.4000	1			
838- GRID	42	1		1.0000	63.0000	.4000	1			
839- GRID	43	1		1.0000	72.0000	.4000	1			
840- GRID	44	1		1.0000	81.0000	.4000	1			
841- GRID	45	1		1.0000	90.0000	.4000	1			
842- GRID	46	1		1.0000	.0000	.2000	1			
843- GRID	47	1		1.0000	9.0000	.2000	1			
844- GRID	48	1		1.0000	18.0000	.2000	1			
845- GRID	49	1		1.0000	27.0000	.2000	1			
846- GRID	50	1		1.0000	36.0000	.2000	1			
847- GRID	51	1		1.0000	45.0000	.2000	1			
848- GRID	52	1		1.0000	54.0000	.2000	1			
849- GRID	53	1		1.0000	63.0000	.2000	1			
850- GRID	54	1		1.0000	72.0000	.2000	1			

APRIL 11. 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

SORTED BULK DATA ECHO

CARD	COUNT	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10
851- GRID	55			1		1.0000		81.0000		.2000		1								
852- GRID	56			1		1.0000		90.0000		.2000		1								
853- GRID	57			1		1.0000		.0000		.0000		1								
854- GRID	58			1		1.0000		9.0000		.0000		1								
855- GRID	59			1		1.0000		18.0000		.0000		1								
856- GRID	60			1		1.0000		27.0000		.0000		1								
857- GRID	61			1		1.0000		36.0000		.0000		1								
858- GRID	62			1		1.0000		45.0000		.0000		1								
859- GRID	63			1		1.0000		54.0000		.0000		1								
860- GRID	64			1		1.0000		63.0000		.0000		1								
861- GRID	65			1		1.0000		72.0000		.0000		1								
862- GRID	66			1		1.0000		81.0000		.0000		1								
863- GRID	67			1		1.0000		90.0000		.0000		1								
864- GRID	68			1		1.0000		.0000		-0.1999		1								
865- GRID	69			1		1.0000		9.0000		-0.1999		1								
866- GRID	70			1		1.0000		18.0000		-0.1999		1								
867- GRID	71			1		1.0000		27.0000		-0.1999		1								
868- GRID	72			1		1.0000		36.0000		-0.1999		1								
869- GRID	73			1		1.0000		45.0000		-0.1999		1								
870- GRID	74			1		1.0000		54.0000		-0.1999		1								
871- GRID	75			1		1.0000		63.0000		-0.1999		1								
872- GRID	76			1		1.0000		72.0000		-0.1999		1								
873- GRID	77			1		1.0000		81.0000		-0.1999		1								
874- GRID	78			1		1.0000		90.0000		-0.1999		1								
875- GRID	79			1		1.0000		.0000		-0.3999		1								
876- GRID	80			1		1.0000		9.0000		-0.3999		1								
877- GRID	81			1		1.0000		18.0000		-0.3999		1								
878- GRID	82			1		1.0000		27.0000		-0.3999		1								
879- GRID	83			1		1.0000		36.0000		-0.3999		1								
880- GRID	84			1		1.0000		45.0000		-0.3999		1								
881- GRID	85			1		1.0000		54.0000		-0.3999		1								
882- GRID	86			1		1.0000		63.0000		-0.3999		1								
883- GRID	87			1		1.0000		72.0000		-0.3999		1								
884- GRID	88			1		1.0000		81.0000		-0.3999		1								
885- GRID	89			1		1.0000		90.0000		-0.3999		1								
886- GRID	90			1		1.0000		.0000		-0.6000		1								
887- GRID	91			1		1.0000		9.0000		-0.6000		1								
888- GRID	92			1		1.0000		18.0000		-0.6000		1								
889- GRID	93			1		1.0000		27.0000		-0.6000		1								
890- GRID	94			1		1.0000		36.0000		-0.6000		1								
891- GRID	95			1		1.0000		45.0000		-0.6000		1								
892- GRID	96			1		1.0000		54.0000		-0.6000		1								
893- GRID	97			1		1.0000		63.0000		-0.6000		1								
894- GRID	98			1		1.0000		72.0000		-0.6000		1								
895- GRID	99			1		1.0000		81.0000		-0.6000		1								
896- GRID	100			1		1.0000		90.0000		-0.6000		1								
897- GRID	101			1		1.0000		.0000		-0.7999		1								
898- GRID	102			1		1.0000		9.0000		-0.7999		1								
899- GRID	103			1		1.0000		18.0000		-0.7999		1								
900- GRID	104			1		1.0000		27.0000		-0.7999		1								

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CARD	1	2	3	4	5	6	7	8	9	10
901- GRID	105	1	1.0000	36.0000	-0.7999	1				
902- GRID	106	1	1.0000	45.0000	-0.7999	1				
903- GRID	107	1	1.0000	54.0000	-0.7999	1				
904- GRID	108	1	1.0000	63.0000	-0.7999	1				
905- GRID	109	1	1.0000	72.0000	-0.7999	1				
906- GRID	110	1	1.0000	81.0000	-0.7999	1				
907- GRID	111	1	1.0000	90.0000	-0.7999	1				
908- GRID	112	1	1.0000	.0000	-1.0000	1				
909- GRID	113	1	1.0000	9.0000	-1.0000	1				
910- GRID	114	1	1.0000	18.0000	-1.0000	1				
911- GRID	115	1	1.0000	27.0000	-1.0000	1				
912- GRID	116	1	1.0000	36.0000	-1.0000	1				
913- GRID	117	1	1.0000	45.0000	-1.0000	1				
914- GRID	118	1	1.0000	54.0000	-1.0000	1				
915- GRID	119	1	1.0000	63.0000	-1.0000	1				
916- GRID	120	1	1.0000	72.0000	-1.0000	1				
917- GRID	121	1	1.0000	81.0000	-1.0000	1				
918- GRID	122	1	1.0000	90.0000	-1.0000	1				
919- GRID	1001	1	1.	0.0	0.0	1				
920- GRID	1002	1	1.	0.0	0.0	1				
921- GRID	1003	1	1.	0.0	0.0	1				
922- GRID	2001	1	1.	0.0	0.0	1				
923- GRID	2002	1	1.	0.0	0.0	1				
924- GRID	2003	1	1.	0.0	0.0	1				
925- GRID	3001	1	1.	0.0	0.0	1				
926- GRID	3002	1	1.	0.0	0.0	1				
927- GRID	3003	1	1.	0.0	0.0	1				
928- GRID	4001	1	1.	0.0	0.0	1				
929- GRID	4002	1	1.	0.0	0.0	1				
930- GRID	4003	1	1.	0.0	0.0	1				
931- GRID	5001	1	1.	0.0	0.0	1				
932- GRID	5002	1	1.	0.0	0.0	1				
933- GRID	5003	1	1.	0.0	0.0	1				
934- GRID	6001	1	1.	0.0	0.0	1				
935- GRID	6002	1	1.	0.0	0.0	1				
936- GRID	6003	1	1.	0.0	0.0	1				
937- GRID	7001	1	1.	0.0	0.0	1				
938- GRID	7002	1	1.	0.0	0.0	1				
939- GRID	7003	1	1.	0.0	0.0	1				
940- GRID	8001	1	1.	0.0	0.0	1				
941- GRID	8002	1	1.	0.0	0.0	1				
942- GRID	8003	1	1.	0.0	0.0	1				
943- GRID	9001	1	1.	0.0	0.0	1				
944- GRID	9002	1	1.	0.0	0.0	1				
945- GRID	9003	1	1.	0.0	0.0	1				
946- GRID	10001	1	1.	0.0	0.0	1				
947- GRID	10002	1	1.	0.0	0.0	1				
948- GRID	10003	1	1.	0.0	0.0	1				
949- GRID	11001	1	1.	0.0	0.0	1				
950- GRID	11002	1	1.	0.0	0.0	1				

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
951-	GRID	11003	1	1	0.0	0.0	1				
952-	MAT1	1	1		.3	3.					
953-	MPC	1	2	1	-1.00000	1001	1	1.00000		EM11011	
954-	EM11011			1002	1 1.00000	1003	1 1.00000				
955-	MPC	1	2	2	-1.00000	1001	2	.00000		EM11012	
956-	EM11012			1002	2 0.00000	1003	2 0.00000				
957-	MPC	1	2	3	-1.00000	1001	3	1.00000		EM11013	
958-	EM11013			1002	3 1.00000	1003	3 1.00000				
959-	MPC	1	2	4	-1.00000	1001	4	.00000		EM11014	
960-	EM11014			1002	4 0.00000	1003	4 0.00000				
961-	MPC	1	2	5	-1.00000	1001	5	1.00000		EM11015	
962-	EM11015			1002	5 1.00000	1003	5 1.00000				
963-	MPC	1	2	6	-1.00000	1001	6	.00000		EM11016	
964-	EM11016			1002	6 0.00000	1003	6 0.00000				
965-	MPC	1	3	1	-1.00000	1001	1	1.00000		EM11021	
966-	EM11021			1002	1 0.95105	1003	1 0.80901				
967-	MPC	1	3	2	-1.00000	1001	2	.00000		EM11022	
968-	EM11022			1002	2 0.30901	1003	2 0.58778				
969-	MPC	1	3	3	-1.00000	1001	3	1.00000		EM11023	
970-	EM11023			1002	3 0.95105	1003	3 0.80901				
971-	MPC	1	3	4	-1.00000	1001	4	.00000		EM11024	
972-	EM11024			1002	4 0.30901	1003	4 0.58778				
973-	MPC	1	3	5	-1.00000	1001	5	1.00000		EM11025	
974-	EM11025			1002	5 0.95105	1003	5 0.80901				
975-	MPC	1	3	6	-1.00000	1001	6	.00000		EM11026	
976-	EM11026			1002	6 0.30901	1003	6 0.58778				
977-	MPC	1	4	1	-1.00000	1001	1	1.00000		EM11031	
978-	EM11031			1002	1 0.80901	1003	1 0.30901				
979-	MPC	1	4	2	-1.00000	1001	2	.00000		EM11032	
980-	EM11032			1002	2 0.58778	1003	2 0.95105				
981-	MPC	1	4	3	-1.00000	1001	3	1.00000		EM11033	
982-	EM11033			1002	3 0.80901	1003	3 0.30901				
983-	MPC	1	4	4	-1.00000	1001	4	.00000		EM11034	
984-	EM11034			1002	4 0.58778	1003	4 0.95105				
985-	MPC	1	4	5	-1.00000	1001	5	1.00000		EM11035	
986-	EM11035			1002	5 0.80901	1003	5 0.30901				
987-	MPC	1	4	6	-1.00000	1001	6	.00000		EM11036	
988-	EM11036			1002	6 0.58778	1003	6 0.95105				
989-	MPC	1	5	1	-1.00000	1001	1	1.00000		EM11041	
990-	EM11041			1002	1 0.58778	1003	1-0.30901				
991-	MPC	1	5	2	-1.00000	1001	2	.00000		EM11042	
992-	EM11042			1002	2 0.80901	1003	2 0.95105				
993-	MPC	1	5	3	-1.00000	1001	3	1.00000		EM11043	
994-	EM11043			1002	3 0.58778	1003	3-0.30901				
995-	MPC	1	5	4	-1.00000	1001	4	.00000		EM11044	
996-	EM11044			1002	4 0.80901	1003	4 0.95105				
997-	MPC	1	5	5	-1.00000	1001	5	1.00000		EM11045	
998-	EM11045			1002	5 0.58778	1003	5-0.30901				
999-	MPC	1	5	6	-1.00000	1001	6	.00000		EM11046	
1000-	EM11046			1002	6 0.80901	1003	6 0.95105				

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1001-	MPC	1	6	1		-1.000001001	1		1.00000		CM11051
1002-	CM11051			1002		1 0.30901	1003		1-0.80901		
1003-	MPC	1	6	2		-1.000001001	2		.00000		CM11052
1004-	CM11052			1002		2 0.95105	1003		2 0.58778		
1005-	MPC	1	6	3		-1.000001001	3		1.00000		CM11053
1006-	CM11053			1002		3 0.30901	1003		3-0.80901		
1007-	MPC	1	6	4		-1.000001001	4		.00000		CM11054
1008-	CM11054			1002		4 0.95105	1003		4 0.58778		
1009-	MPC	1	6	5		-1.000001001	5		1.00000		CM11055
1010-	CM11055			1002		5 0.30901	1003		5-0.80901		
1011-	MPC	1	6	6		-1.000001001	6		.00000		CM11056
1012-	CM11056			1002		6 0.95105	1003		6 0.58778		
1013-	MPC	1	7	1		-1.000001001	1		1.00000		CM11061
1014-	CM11061			1002		1 0.00000	1003		1-1.00000		
1015-	MPC	1	7	2		-1.000001001	2		.00000		CM11062
1016-	CM11062			1002		2 1.00000	1003		2 0.00000		
1017-	MPC	1	7	3		-1.000001001	3		1.00000		CM11063
1018-	CM11063			1002		3 0.00000	1003		3-1.00000		
1019-	MPC	1	7	4		-1.000001001	4		.00000		CM11064
1020-	CM11064			1002		4 1.00000	1003		4 0.00000		
1021-	MPC	1	7	5		-1.000001001	5		1.00000		CM11065
1022-	CM11065			1002		5 0.00000	1003		5-1.00000		
1023-	MPC	1	7	6		-1.000001001	6		.00000		CM11066
1024-	CM11066			1002		6 1.00000	1003		6 0.00000		
1025-	MPC	1	8	1		-1.000001001	1		1.00000		CM11071
1026-	CM11071			1002		1-0.30901	1003		1-0.80901		
1027-	MPC	1	8	2		-1.000001001	2		.00000		CM11072
1028-	CM11072			1002		2 0.95105	1003		2-0.58778		
1029-	MPC	1	8	3		-1.000001001	3		1.00000		CM11073
1030-	CM11073			1002		3-0.30901	1003		3-0.80901		
1031-	MPC	1	8	4		-1.000001001	4		.00000		CM11074
1032-	CM11074			1002		4 0.95105	1003		4-0.58778		
1033-	MPC	1	8	5		-1.000001001	5		1.00000		CM11075
1034-	CM11075			1002		5-0.30901	1003		5-0.80901		
1035-	MPC	1	8	6		-1.000001001	6		.00000		CM11076
1036-	CM11076			1002		6 0.95105	1003		6-0.58778		
1037-	MPC	1	9	1		-1.000001001	1		1.00000		CM11081
1038-	CM11081			1002		1-0.58778	1003		1-0.30901		
1039-	MPC	1	9	2		-1.000001001	2		.00000		CM11082
1040-	CM11082			1002		2 0.80901	1003		2-0.95105		
1041-	MPC	1	9	3		-1.000001001	3		1.00000		CM11083
1042-	CM11083			1002		3-0.58778	1003		3-0.30901		
1043-	MPC	1	9	4		-1.000001001	4		.00000		CM11084
1044-	CM11084			1002		4 0.80901	1003		4-0.95105		
1045-	MPC	1	9	5		-1.000001001	5		1.00000		CM11085
1046-	CM11085			1002		5-0.58778	1003		5-0.30901		
1047-	MPC	1	9	6		-1.000001001	6		.00000		CM11086
1048-	CM11086			1002		6 0.80901	1003		6-0.95105		
1049-	MPC	1	10	1		-1.000001001	1		1.00000		CM11091
1050-	CM11091			1002		1-0.80901	1003		1 0.30901		

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1051- MPC	1	10	2	-1.000001001	2	.00000				EN11092	
1052- EN11092			1002	2 0.58778	1003	2-0.95105					
1053- MPC	1	10	3	-1.000001001	3	1.00000				EN11093	
1054- EN11093			1002	3-0.80901	1003	3 0.30901					
1055- MPC	1	10	4	-1.000001001	4	.00000				EN11094	
1056- EN11094			1002	4 0.58778	1003	4-0.95105					
1057- MPC	1	10	5	-1.000001001	5	1.00000				EN11095	
1058- EN11095			1002	5-0.80901	1003	5 0.30901					
1059- MPC	1	10	6	-1.000001001	6	.00000				EN11096	
1060- EN11096			1002	6 0.58778	1003	6-0.95105					
1061- MPC	1	11	1	-1.000001001	1	1.00000				EN11101	
1062- EN11101			1002	1-0.95105	1003	1 0.80901					
1063- MPC	1	11	2	-1.000001001	2	.00000				EN11102	
1064- EN11102			1002	2 0.30901	1003	2-0.58778					
1065- MPC	1	11	3	-1.000001001	3	1.00000				EN11103	
1066- EN11103			1002	3-0.95105	1003	3 0.80901					
1067- MPC	1	11	4	-1.000001001	4	.00000				EN11104	
1068- EN11104			1002	4 0.30901	1003	4-0.58778					
1069- MPC	1	11	5	-1.000001001	5	1.00000				EN11105	
1070- EN11105			1002	5-0.95105	1003	5 0.80901					
1071- MPC	1	11	6	-1.000001001	6	.00000				EN11106	
1072- EN11106			1002	6 0.30901	1003	6-0.58778					
1073- MPC	1	12	1	-1.000001001	1	1.00000				EN11111	
1074- EN11111			1002	1-1.00000	1003	1 1.00000					
1075- MPC	1	12	2	-1.000001001	2	.00000				EN11112	
1076- EN11112			1002	2 0.00000	1003	2-0.00000					
1077- MPC	1	12	3	-1.000001001	3	1.00000				EN11113	
1078- EN11113			1002	3-1.00000	1003	3 1.00000					
1079- MPC	1	12	4	-1.000001001	4	.00000				EN11114	
1080- EN11114			1002	4 0.00000	1003	4-0.00000					
1081- MPC	1	12	5	-1.000001001	5	1.00000				EN11115	
1082- EN11115			1002	5-1.00000	1003	5 1.00000					
1083- MPC	1	12	6	-1.000001001	6	.00000				EN11116	
1084- EN11116			1002	6 0.00000	1003	6-0.00000					
1085- MPC	1	13	1	-1.000002001	1	1.00000				EN12011	
1086- EN12011			2002	1 1.00000	2003	1 1.00000					
1087- MPC	1	13	2	-1.000002001	2	.00000				EN12012	
1088- EN12012			2002	2 0.00000	2003	2 0.00000					
1089- MPC	1	13	3	-1.000002001	3	1.00000				EN12013	
1090- EN12013			2002	3 1.00000	2003	3 1.00000					
1091- MPC	1	13	4	-1.000002001	4	.00000				EN12014	
1092- EN12014			2002	4 0.00000	2003	4 0.00000					
1093- MPC	1	13	5	-1.000002001	5	1.00000				EN12015	
1094- EN12015			2002	5 1.00000	2003	5 1.00000					
1095- MPC	1	13	6	-1.000002001	6	.00000				EN12016	
1096- EN12016			2002	6 0.00000	2003	6 0.00000					
1097- MPC	1	14	1	-1.000002001	1	1.00000				EN12021	
1098- EN12021			2002	1 0.95105	2003	1 0.80901					
1099- MPC	1	14	2	-1.000002001	2	.00000				EN12022	
1100- EN12022			2002	2 0.30901	2003	2 0.58778					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1101- MPC	1	14	3	-1.000002001	3	1.00000	EM12023				
1102- EM12023		2002	3 0.95105	2003	3 0.80901						
1103- MPC	1	14	4	-1.000002001	4	.00000	EM12024				
1104- EM12024		2002	4 0.30901	2003	4 0.58778						
1105- MPC	1	14	5	-1.000002001	5	1.00000	EM12025				
1106- EM12025		2002	5 0.95105	2003	5 0.80901						
1107- MPC	1	14	6	-1.000002001	6	.00000	EM12026				
1108- EM12026		2002	6 0.30901	2003	6 0.58778						
1109- MPC	1	15	1	-1.000002001	1	1.00000	EM12031				
1110- EM12031		2002	1 0.80901	2003	1 0.30901						
1111- MPC	1	15	2	-1.000002001	2	.00000	EM12032				
1112- EM12032		2002	2 0.58778	2003	2 0.95105						
1113- MPC	1	15	3	-1.000002001	3	1.00000	EM12033				
1114- EM12033		2002	3 0.80901	2003	3 0.30901						
1115- MPC	1	15	4	-1.000002001	4	.00000	EM12034				
1116- EM12034		2002	4 0.58778	2003	4 0.95105						
1117- MPC	1	15	5	-1.000002001	5	1.00000	EM12035				
1118- EM12035		2002	5 0.80901	2003	5 0.30901						
1119- MPC	1	15	6	-1.000002001	6	.00000	EM12036				
1120- EM12036		2002	6 0.58778	2003	6 0.95105						
1121- MPC	1	16	1	-1.000002001	1	1.00000	EM12041				
1122- EM12041		2002	1 0.58778	2003	1-0.30901						
1123- MPC	1	16	2	-1.000002001	2	.00000	EM12042				
1124- EM12042		2002	2 0.80901	2003	2 0.95105						
1125- MPC	1	16	3	-1.000002001	3	1.00000	EM12043				
1126- EM12043		2002	3 0.58778	2003	3-0.30901						
1127- MPC	1	16	4	-1.000002001	4	.00000	EM12044				
1128- EM12044		2002	4 0.80901	2003	4 0.95105						
1129- MPC	1	16	5	-1.000002001	5	1.00000	EM12045				
1130- EM12045		2002	5 0.58778	2003	5-0.30901						
1131- MPC	1	16	6	-1.000002001	6	.00000	EM12046				
1132- EM12046		2002	6 0.80901	2003	6 0.95105						
1133- MPC	1	17	1	-1.000002001	1	1.00000	EM12051				
1134- EM12051		2002	1 0.30901	2003	1-0.80901						
1135- MPC	1	17	2	-1.000002001	2	.00000	EM12052				
1136- EM12052		2002	2 0.95105	2003	2 0.58778						
1137- MPC	1	17	3	-1.000002001	3	1.00000	EM12053				
1138- EM12053		2002	3 0.30901	2003	3-0.80901						
1139- MPC	1	17	4	-1.000002001	4	.00000	EM12054				
1140- EM12054		2002	4 0.95105	2003	4 0.58778						
1141- MPC	1	17	5	-1.000002001	5	1.00000	EM12055				
1142- EM12055		2002	5 0.30901	2003	5-0.80901						
1143- MPC	1	17	6	-1.000002001	6	.00000	EM12056				
1144- EM12056		2002	6 0.95105	2003	6 0.58778						
1145- MPC	1	18	1	-1.000002001	1	1.00000	EM12061				
1146- EM12061		2002	1 0.00000	2003	1-1.00000						
1147- MPC	1	18	2	-1.000002001	2	.00000	EM12062				
1148- EM12062		2002	2 1.00000	2003	2 0.00000						
1149- MPC	1	18	3	-1.000002001	3	1.00000	EM12063				
1150- EM12063		2002	3 0.00000	2003	3-1.00000						

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1151-	MPC	1	18	4		-1.000002001	4		.00000		EM12064
1152-	EM12064			2002		4 1.00000	2003		4 0.00000		
1153-	MPC	1	18	5		-1.000002001	5		1.00000		EM12065
1154-	EM12065			2002		5 0.00000	2003		5-1.00000		
1155-	MPC	1	18	6		-1.000002001	6		.00000		EM12066
1156-	EM12066			2002		6 1.00000	2003		6 0.00000		
1157-	MPC	1	19	1		-1.000002001	1		1.00000		EM12071
1158-	EM12071			2002		1-0.30901	2003		1-0.80901		
1159-	MPC	1	19	2		-1.000002001	2		.00000		EM12072
1160-	EM12072			2002		2 0.95105	2003		2-0.58778		
1161-	MPC	1	19	3		-1.000002001	3		1.00000		EM12073
1162-	EM12073			2002		3-0.30901	2003		3-0.80901		
1163-	MPC	1	19	4		-1.000002001	4		.00000		EM12074
1164-	EM12074			2002		4 0.95105	2003		4-0.58778		
1165-	MPC	1	19	5		-1.000002001	5		1.00000		EM12075
1166-	EM12075			2002		5-0.30901	2003		5-0.80901		
1167-	MPC	1	19	6		-1.000002001	6		.00000		EM12076
1168-	EM12076			2002		6 0.95105	2003		6-0.58778		
1169-	MPC	1	20	1		-1.000002001	1		1.00000		EM12081
1170-	EM12081			2002		1-0.58778	2003		1-0.30901		
1171-	MPC	1	20	2		-1.000002001	2		.00000		EM12082
1172-	EM12082			2002		2 0.80901	2003		2-0.95105		
1173-	MPC	1	20	3		-1.000002001	3		1.00000		EM12083
1174-	EM12083			2002		3-0.58778	2003		3-0.30901		
1175-	MPC	1	20	4		-1.000002001	4		.00000		EM12084
1176-	EM12084			2002		4 0.80901	2003		4-0.95105		
1177-	MPC	1	20	5		-1.000002001	5		1.00000		EM12085
1178-	EM12085			2002		5-0.58778	2003		5-0.30901		
1179-	MPC	1	20	6		-1.000002001	6		.00000		EM12086
1180-	EM12086			2002		6 0.80901	2003		6-0.95105		
1181-	MPC	1	21	1		-1.000002001	1		1.00000		EM12091
1182-	EM12091			2002		1-0.80901	2003		1 0.30901		
1183-	MPC	1	21	2		-1.000002001	2		.00000		EM12092
1184-	EM12092			2002		2 0.58778	2003		2-0.95105		
1185-	MPC	1	21	3		-1.000002001	3		1.00000		EM12093
1186-	EM12093			2002		3-0.80901	2003		3 0.30901		
1187-	MPC	1	21	4		-1.000002001	4		.00000		EM12094
1188-	EM12094			2002		4 0.58778	2003		4-0.95105		
1189-	MPC	1	21	5		-1.000002001	5		1.00000		EM12095
1190-	EM12095			2002		5-0.80901	2003		5 0.30901		
1191-	MPC	1	21	6		-1.000002001	6		.00000		EM12096
1192-	EM12096			2002		6 0.58778	2003		6-0.95105		
1193-	MPC	1	22	1		-1.000002001	1		1.00000		EM12101
1194-	EM12101			2002		1-0.95105	2003		1 0.80901		
1195-	MPC	1	22	2		-1.000002001	2		.00000		EM12102
1196-	EM12102			2002		2 0.30901	2003		2-0.58778		
1197-	MPC	1	22	3		-1.000002001	3		1.00000		EM12103
1198-	EM12103			2002		3-0.95105	2003		3 0.80901		
1199-	MPC	1	22	4		-1.000002001	4		.00000		EM12104
1200-	EM12104			2002		4 0.30901	2003		4-0.58778		



SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
1201- MPC	1	22	5		-1.000002001	5		1.00000		EM12105
1202- EM12105			2002		5-0.95105	2003		5 0.80901		
1203- MPC	1	22	6		-1.000002001	6		.00000		EM12106
1204- EM12106			2002		6 0.30901	2003		6-0.58778		
1205- MPC	1	23	1		-1.000002001	1		1.00000		EM12111
1206- EM12111			2002		1-1.00000	2003		1 1.00000		
1207- MPC	1	23	2		-1.000002001	2		.00000		EM12112
1208- EM12112			2002		2 0.00000	2003		2-0.00000		
1209- MPC	1	23	3		-1.000002001	3		1.00000		EM12113
1210- EM12113			2002		3-1.00000	2003		3 1.00000		
1211- MPC	1	23	4		-1.000002001	4		.00000		EM12114
1212- EM12114			2002		4 0.00000	2003		4-0.00000		
1213- MPC	1	23	5		-1.000002001	5		1.00000		EM12115
1214- EM12115			2002		5-1.00000	2003		5 1.00000		
1215- MPC	1	23	6		-1.000002001	6		.00000		EM12116
1216- EM12116			2002		6 0.00000	2003		6-0.00000		
1217- MPC	1	24	1		-1.000003001	1		1.00000		EM13011
1218- EM13011			3002		1 1.00000	3003		1 1.00000		
1219- MPC	1	24	2		-1.000003001	2		.00000		EM13012
1220- EM13012			3002		2 0.00000	3003		2 0.00000		
1221- MPC	1	24	3		-1.000003001	3		1.00000		EM13013
1222- EM13013			3002		3 1.00000	3003		3 1.00000		
1223- MPC	1	24	4		-1.000003001	4		.00000		EM13014
1224- EM13014			3002		4 0.00000	3003		4 0.00000		
1225- MPC	1	24	5		-1.000003001	5		1.00000		EM13015
1226- EM13015			3002		5 1.00000	3003		5 1.00000		
1227- MPC	1	24	6		-1.000003001	6		.00000		EM13016
1228- EM13016			3002		6 0.00000	3003		6 0.00000		
1229- MPC	1	25	1		-1.000003001	1		1.00000		EM13021
1230- EM13021			3002		1 0.95105	3003		1 0.80901		
1231- MPC	1	25	2		-1.000003001	2		.00000		EM13022
1232- EM13022			3002		2 0.30901	3003		2 0.58778		
1233- MPC	1	25	3		-1.000003001	3		1.00000		EM13023
1234- EM13023			3002		3 0.95105	3003		3 0.80901		
1235- MPC	1	25	4		-1.000003001	4		.00000		EM13024
1236- EM13024			3002		4 0.30901	3003		4 0.58778		
1237- MPC	1	25	5		-1.000003001	5		1.00000		EM13025
1238- EM13025			3002		5 0.95105	3003		5 0.80901		
1239- MPC	1	25	6		-1.000003001	6		.00000		EM13026
1240- EM13026			3002		6 0.30901	3003		6 0.58778		
1241- MPC	1	26	1		-1.000003001	1		1.00000		EM13031
1242- EM13031			3002		1 0.80901	3003		1 0.30901		
1243- MPC	1	26	2		-1.000003001	2		.00000		EM13032
1244- EM13032			3002		2 0.58778	3003		2 0.95105		
1245- MPC	1	26	3		-1.000003001	3		1.00000		EM13033
1246- EM13033			3002		3 0.80901	3003		3 0.30901		
1247- MPC	1	26	4		-1.000003001	4		.00000		EM13034
1248- EM13034			3002		4 0.58778	3003		4 0.95105		
1249- MPC	1	26	5		-1.000003001	5		1.00000		EM13035
1250- EM13035			3002		5 0.80901	3003		5 0.30901		

AXISYMMETRIC CIRC. CYL. WITH FLUID  
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SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1251-	MPC	1	26	6	-1.000003001	6	.00000	6M13036			
1252-	6M13036			3002	6 0.58778	3003	6 0.95105				
1253-	MPC	1	27	1	-1.000003001	1	1.00000	6M13041			
1254-	6M13041			3002	1 0.58778	3003	1-0.30901				
1255-	MPC	1	27	2	-1.000003001	2	.00000	6M13042			
1256-	6M13042			3002	2 0.80901	3003	2 0.95105				
1257-	MPC	1	27	3	-1.000003001	3	1.00000	6M13043			
1258-	6M13043			3002	3 0.58778	3003	3-0.30901				
1259-	MPC	1	27	4	-1.000003001	4	.00000	6M13044			
1260-	6M13044			3002	4 0.80901	3003	4 0.95105				
1261-	MPC	1	27	5	-1.000003001	5	1.00000	6M13045			
1262-	6M13045			3002	5 0.58778	3003	5-0.30901				
1263-	MPC	1	27	6	-1.000003001	6	.00000	6M13046			
1264-	6M13046			3002	6 0.80901	3003	6 0.95105				
1265-	MPC	1	28	1	-1.000003001	1	1.00000	6M13051			
1266-	6M13051			3002	1 0.30901	3003	1-0.80901				
1267-	MPC	1	28	2	-1.000003001	2	.00000	6M13052			
1268-	6M13052			3002	2 0.95105	3003	2 0.58778				
1269-	MPC	1	28	3	-1.000003001	3	1.00000	6M13053			
1270-	6M13053			3002	3 0.30901	3003	3-0.80901				
1271-	MPC	1	28	4	-1.000003001	4	.00000	6M13054			
1272-	6M13054			3002	4 0.95105	3003	4 0.58778				
1273-	MPC	1	28	5	-1.000003001	5	1.00000	6M13055			
1274-	6M13055			3002	5 0.30901	3003	5-0.80901				
1275-	MPC	1	28	6	-1.000003001	6	.00000	6M13056			
1276-	6M13056			3002	6 0.95105	3003	6 0.58778				
1277-	MPC	1	29	1	-1.000003001	1	1.00000	6M13061			
1278-	6M13061			3002	1 0.00000	3003	1-1.00000				
1279-	MPC	1	29	2	-1.000003001	2	.00000	6M13062			
1280-	6M13062			3002	2 1.00000	3003	2 0.00000				
1281-	MPC	1	29	3	-1.000003001	3	1.00000	6M13063			
1282-	6M13063			3002	3 0.00000	3003	3-1.00000				
1283-	MPC	1	29	4	-1.000003001	4	.00000	6M13064			
1284-	6M13064			3002	4 1.00000	3003	4 0.00000				
1285-	MPC	1	29	5	-1.000003001	5	1.00000	6M13065			
1286-	6M13065			3002	5 0.00000	3003	5-1.00000				
1287-	MPC	1	29	6	-1.000003001	6	.00000	6M13066			
1288-	6M13066			3002	6 1.00000	3003	6 0.00000				
1289-	MPC	1	30	1	-1.000003001	1	1.00000	6M13071			
1290-	6M13071			3002	1-0.30901	3003	1-0.80901				
1291-	MPC	1	30	2	-1.000003001	2	.00000	6M13072			
1292-	6M13072			3002	2 0.95105	3003	2-0.58778				
1293-	MPC	1	30	3	-1.000003001	3	1.00000	6M13073			
1294-	6M13073			3002	3-0.30901	3003	3-0.80901				
1295-	MPC	1	30	4	-1.000003001	4	.00000	6M13074			
1296-	6M13074			3002	4 0.95105	3003	4-0.58778				
1297-	MPC	1	30	5	-1.000003001	5	1.00000	6M13075			
1298-	6M13075			3002	5-0.30901	3003	5-0.80901				
1299-	MPC	1	30	6	-1.000003001	6	.00000	6M13076			
1300-	6M13076			3002	6 0.95105	3003	6-0.58778				

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

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S O R T E D B U L K D A T A E C H O									
CARD	1	2	3	4	5	6	7	8	9
COUNT	1	2	3	4	5	6	7	8	9
1301- MPC	1	31	1		-1.00000300	1	1	1.00000	EM13081
1302- EM13081			3002		1-0.58778	3003		1-0.30901	
1303- MPC	1	31	2		-1.00000300	1	2	.00000	EM13082
1304- EM13082			3002		2 0.80901	3003		2-0.95105	
1305- MPC	1	31	3		-1.00000300	1	3	1.00000	EM13083
1306- EM13083			3002		3-0.58778	3003		3-0.30901	
1307- MPC	1	31	4		-1.00000300	1	4	.00000	EM13084
1308- EM13084			3002		4 0.80901	3003		4-0.95105	
1309- MPC	1	31	5		-1.00000300	1	5	1.00000	EM13085
1310- EM13085			3002		5-0.58778	3003		5-0.30901	
1311- MPC	1	31	6		-1.00000300	1	6	.00000	EM13086
1312- EM13086			3002		6 0.80901	3003		6-0.95105	
1313- MPC	1	32	1		-1.00000300	1	1	1.00000	EM13091
1314- EM13091			3002		1-0.80901	3003		1 0.30901	
1315- MPC	1	32	2		-1.00000300	1	2	.00000	EM13092
1316- EM13092			3002		2 0.58778	3003		2-0.95105	
1317- MPC	1	32	3		-1.00000300	1	3	1.00000	EM13093
1318- EM13093			3002		3-0.80901	3003		3 0.30901	
1319- MPC	1	32	4		-1.00000300	1	4	.00000	EM13094
1320- EM13094			3002		4 0.58778	3003		4-0.95105	
1321- MPC	1	32	5		-1.00000300	1	5	1.00000	EM13095
1322- EM13095			3002		5-0.80901	3003		5 0.30901	
1323- MPC	1	32	6		-1.00000300	1	6	.00000	EM13096
1324- EM13096			3002		6 0.58778	3003		6-0.95105	
1325- MPC	1	33	1		-1.00000300	1	1	1.00000	EM13101
1326- EM13101			3002		1-0.95105	3003		1 0.80901	
1327- MPC	1	33	2		-1.00000300	1	2	.00000	EM13102
1328- EM13102			3002		2 0.30901	3003		2-0.58778	
1329- MPC	1	33	3		-1.00000300	1	3	1.00000	EM13103
1330- EM13103			3002		3-0.95105	3003		3 0.80901	
1331- MPC	1	33	4		-1.00000300	1	4	.00000	EM13104
1332- EM13104			3002		4 0.30901	3003		4-0.58778	
1333- MPC	1	33	5		-1.00000300	1	5	1.00000	EM13105
1334- EM13105			3002		5-0.95105	3003		5 0.80901	
1335- MPC	1	33	6		-1.00000300	1	6	.00000	EM13106
1336- EM13106			3002		6 0.30901	3003		6-0.58778	
1337- MPC	1	34	1		-1.00000300	1	1	1.00000	EM13111
1338- EM13111			3002		1-1.00000	3003		1 1.00000	
1339- MPC	1	34	2		-1.00000300	1	2	.00000	EM13112
1340- EM13112			3002		2 0.00000	3003		2-0.00000	
1341- MPC	1	34	3		-1.00000300	1	3	1.00000	EM13113
1342- EM13113			3002		3-1.00000	3003		3 1.00000	
1343- MPC	1	34	4		-1.00000300	1	4	.00000	EM13114
1344- EM13114			3002		4 0.00000	3003		4-0.00000	
1345- MPC	1	34	5		-1.00000300	1	5	1.00000	EM13115
1346- EM13115			3002		5-1.00000	3003		5 1.00000	
1347- MPC	1	34	6		-1.00000300	1	6	.00000	EM13116
1348- EM13116			3002		6 0.00000	3003		6-0.00000	
1349- MPC	1	35	1		-1.00000400	1	1	1.00000	EM14011
1350- EM14011			4002		1 1.00000	4003		1 1.00000	

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	..	..	..	..	..	..	..	..	..	..
1351- MPC	1	35	2		-1.000004001	2		.00000		EN14012
1352- EN14012			4002		2 0.00000	4003		2 0.00000		
1353- MPC	1	35	3		-1.000004001	3		1.00000		EN14013
1354- EN14013			4002		3 1.00000	4003		3 1.00000		
1355- MPC	1	35	4		-1.000004001	4		.00000		EN14014
1356- EN14014			4002		4 0.00000	4003		4 0.00000		
1357- MPC	1	35	5		-1.000004001	5		1.00000		EN14015
1358- EN14015			4002		5 1.00000	4003		5 1.00000		
1359- MPC	1	35	6		-1.000004001	6		.00000		EN14016
1360- EN14016			4002		6 0.00000	4003		6 0.00000		
1361- MPC	1	36	1		-1.000004001	1		1.00000		EN14021
1362- EN14021			4002		1 0.95105	4003		1 0.80901		
1363- MPC	1	36	2		-1.000004001	2		.00000		EN14022
1364- EN14022			4002		2 0.30901	4003		2 0.58778		
1365- MPC	1	36	3		-1.000004001	3		1.00000		EN14023
1366- EN14023			4002		3 0.95105	4003		3 0.80901		
1367- MPC	1	36	4		-1.000004001	4		.00000		EN14024
1368- EN14024			4002		4 0.30901	4003		4 0.58778		
1369- MPC	1	36	5		-1.000004001	5		1.00000		EN14025
1370- EN14025			4002		5 0.95105	4003		5 0.80901		
1371- MPC	1	36	6		-1.000004001	6		.00000		EN14026
1372- EN14026			4002		6 0.30901	4003		6 0.58778		
1373- MPC	1	37	1		-1.000004001	1		1.00000		EN14031
1374- EN14031			4002		1 0.80901	4003		1 0.30901		
1375- MPC	1	37	2		-1.000004001	2		.00000		EN14032
1376- EN14032			4002		2 0.58778	4003		2 0.95105		
1377- MPC	1	37	3		-1.000004001	3		1.00000		EN14033
1378- EN14033			4002		3 0.80901	4003		3 0.30901		
1379- MPC	1	37	4		-1.000004001	4		.00000		EN14034
1380- EN14034			4002		4 0.58778	4003		4 0.95105		
1381- MPC	1	37	5		-1.000004001	5		1.00000		EN14035
1382- EN14035			4002		5 0.80901	4003		5 0.30901		
1383- MPC	1	37	6		-1.000004001	6		.00000		EN14036
1384- EN14036			4002		6 0.58778	4003		6 0.95105		
1385- MPC	1	38	1		-1.000004001	1		1.00000		EN14041
1386- EN14041			4002		1 0.58778	4003		1-0.30901		
1387- MPC	1	38	2		-1.000004001	2		.00000		EN14042
1388- EN14042			4002		2 0.80901	4003		2 0.95105		
1389- MPC	1	38	3		-1.000004001	3		1.00000		EN14043
1390- EN14043			4002		3 0.58778	4003		3-0.30901		
1391- MPC	1	38	4		-1.000004001	4		.00000		EN14044
1392- EN14044			4002		4 0.80901	4003		4 0.95105		
1393- MPC	1	38	5		-1.000004001	5		1.00000		EN14045
1394- EN14045			4002		5 0.58778	4003		5-0.30901		
1395- MPC	1	38	6		-1.000004001	6		.00000		EN14046
1396- EN14046			4002		6 0.80901	4003		6 0.95105		
1397- MPC	1	39	1		-1.000004001	1		1.00000		EN14051
1398- EN14051			4002		1 0.30901	4003		1-0.80901		
1399- MPC	1	39	2		-1.000004001	2		.00000		EN14052
1400- EN14052			4002		2 0.95105	4003		2 0.58778		

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	..	..	..	..	..	..	..	..	..	..
1401- MPC	1	39	3		-1.000004001	3		1.00000		EM14053
1402- EM14053			4002		3 0.30901	4003		3-0.80901		
1403- MPC	1	39	4		-1.000004001	4		.00000		EM14054
1404- EM14054			4002		4 0.95105	4003		4 0.58778		
1405- MPC	1	39	5		-1.000004001	5		1.00000		EM14055
1406- EM14055			4002		5 0.30901	4003		5-0.80901		
1407- MPC	1	39	6		-1.000004001	6		.00000		EM14056
1408- EM14056			4002		6 0.95105	4003		6 0.58778		
1409- MPC	1	40	1		-1.000004001	1		1.00000		EM14061
1410- EM14061			4002		1 0.00000	4003		1-1.00000		
1411- MPC	1	40	2		-1.000004001	2		.00000		EM14062
1412- EM14062			4002		2 1.00000	4003		2 0.00000		
1413- MPC	1	40	3		-1.000004001	3		1.00000		EM14063
1414- EM14063			4002		3 0.00000	4003		3-1.00000		
1415- MPC	1	40	4		-1.000004001	4		.00000		EM14064
1416- EM14064			4002		4 1.00000	4003		4 0.00000		
1417- MPC	1	40	5		-1.000004001	5		1.00000		EM14065
1418- EM14065			4002		5 0.00000	4003		5-1.00000		
1419- MPC	1	40	6		-1.000004001	6		.00000		EM14066
1420- EM14066			4002		6 1.00000	4003		6 0.00000		
1421- MPC	1	41	1		-1.000004001	1		1.00000		EM14071
1422- EM14071			4002		1-0.30901	4003		1-0.80901		
1423- MPC	1	41	2		-1.000004001	2		.00000		EM14072
1424- EM14072			4002		2 0.95105	4003		2-0.58778		
1425- MPC	1	41	3		-1.000004001	3		1.00000		EM14073
1426- EM14073			4002		3-0.30901	4003		3-0.80901		
1427- MPC	1	41	4		-1.000004001	4		.00000		EM14074
1428- EM14074			4002		4 0.95105	4003		4-0.58778		
1429- MPC	1	41	5		-1.000004001	5		1.00000		EM14075
1430- EM14075			4002		5-0.30901	4003		5-0.80901		
1431- MPC	1	41	6		-1.000004001	6		.00000		EM14076
1432- EM14076			4002		6 0.95105	4003		6-0.58778		
1433- MPC	1	42	1		-1.000004001	1		1.00000		EM14081
1434- EM14081			4002		1-0.58778	4003		1-0.30901		
1435- MPC	1	42	2		-1.000004001	2		.00000		EM14082
1436- EM14082			4002		2 0.80901	4003		2-0.95105		
1437- MPC	1	42	3		-1.000004001	3		1.00000		EM14083
1438- EM14083			4002		3-0.58778	4003		3-0.30901		
1439- MPC	1	42	4		-1.000004001	4		.00000		EM14084
1440- EM14084			4002		4 0.80901	4003		4-0.95105		
1441- MPC	1	42	5		-1.000004001	5		1.00000		EM14085
1442- EM14085			4002		5-0.58778	4003		5-0.30901		
1443- MPC	1	42	6		-1.000004001	6		.00000		EM14086
1444- EM14086			4002		6 0.80901	4003		6-0.95105		
1445- MPC	1	43	1		-1.000004001	1		1.00000		EM14091
1446- EM14091			4002		1-0.80901	4003		1 0.30901		
1447- MPC	1	43	2		-1.000004001	2		.00000		EM14092
1448- EM14092			4002		2 0.58778	4003		2-0.95105		
1449- MPC	1	43	3		-1.000004001	3		1.00000		EM14093
1450- EM14093			4002		3-0.80901	4003		3 0.30901		

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SORTED BULK DATA ECHO									
CARD	1	2	3	4	5	6	7	8	9
COUNT	1	2	3	4	5	6	7	8	9
1451- MPC	1	43	4		-1.000004001	4		.00000	EM14094
1452- EM14094			4002		4 0.58778	4003		4-0.95105	
1453- MPC	1	43	5		-1.000004001	5		1.00000	EM14095
1454- EM14095			4002		5-0.80901	4003		5 0.30901	
1455- MPC	1	43	6		-1.000004001	6		.00000	EM14096
1456- EM14096			4002		6 0.58778	4003		6-0.95105	
1457- MPC	1	44	1		-1.000004001	1		1.00000	EM14101
1458- EM14101			4002		1-0.95105	4003		1 0.80901	
1459- MPC	1	44	2		-1.000004001	2		.00000	EM14102
1460- EM14102			4002		2 0.30901	4003		2-0.58778	
1461- MPC	1	44	3		-1.000004001	3		1.00000	EM14103
1462- EM14103			4002		3-0.95105	4003		3 0.80901	
1463- MPC	1	44	4		-1.000004001	4		.00000	EM14104
1464- EM14104			4002		4 0.30901	4003		4-0.58778	
1465- MPC	1	44	5		-1.000004001	5		1.00000	EM14105
1466- EM14105			4002		5-0.95105	4003		5 0.80901	
1467- MPC	1	44	6		-1.000004001	6		.00000	EM14106
1468- EM14106			4002		6 0.30901	4003		6-0.58778	
1469- MPC	1	45	1		-1.000004001	1		1.00000	EM14111
1470- EM14111			4002		1-1.00000	4003		1 1.00000	
1471- MPC	1	45	2		-1.000004001	2		.00000	EM14112
1472- EM14112			4002		2 0.00000	4003		2-0.00000	
1473- MPC	1	45	3		-1.000004001	3		1.00000	EM14113
1474- EM14113			4002		3-1.00000	4003		3 1.00000	
1475- MPC	1	45	4		-1.000004001	4		.00000	EM14114
1476- EM14114			4002		4 0.00000	4003		4-0.00000	
1477- MPC	1	45	5		-1.000004001	5		1.00000	EM14115
1478- EM14115			4002		5-1.00000	4003		5 1.00000	
1479- MPC	1	45	6		-1.000004001	6		.00000	EM14116
1480- EM14116			4002		6 0.00000	4003		6-0.00000	
1481- MPC	1	46	1		-1.000005001	1		1.00000	EM15011
1482- EM15011			5002		1 1.00000	5003		1 1.00000	
1483- MPC	1	46	2		-1.000005001	2		.00000	EM15012
1484- EM15012			5002		2 0.00000	5003		2 0.00000	
1485- MPC	1	46	3		-1.000005001	3		1.00000	EM15013
1486- EM15013			5002		3 1.00000	5003		3 1.00000	
1487- MPC	1	46	4		-1.000005001	4		.00000	EM15014
1488- EM15014			5002		4 0.00000	5003		4 0.00000	
1489- MPC	1	46	5		-1.000005001	5		1.00000	EM15015
1490- EM15015			5002		5 1.00000	5003		5 1.00000	
1491- MPC	1	46	6		-1.000005001	6		.00000	EM15016
1492- EM15016			5002		6 0.00000	5003		6 0.00000	
1493- MPC	1	47	1		-1.000005001	1		1.00000	EM15021
1494- EM15021			5002		1 0.95105	5003		1 0.80901	
1495- MPC	1	47	2		-1.000005001	2		.00000	EM15022
1496- EM15022			5002		2 0.30901	5003		2 0.58778	
1497- MPC	1	47	3		-1.000005001	3		1.00000	EM15023
1498- EM15023			5002		3 0.95105	5003		3 0.80901	
1499- MPC	1	47	4		-1.000005001	4		.00000	EM15024
1500- EM15024			5002		4 0.30901	5003		4 0.58778	

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1501- MPC	1	47	5	-1.000005001	5	1.00000	EN15025				
1502- EN15025		5002	5	0.95105	5003	5	0.80901				
1503- MPC	1	47	6	-1.000005001	6	.00000	EN15026				
1504- EN15026		5002	6	0.30901	5003	6	0.58778				
1505- MPC	1	48	1	-1.000005001	1	1.00000	EN15031				
1506- EN15031		5002	1	0.80901	5003	1	0.30901				
1507- MPC	1	48	2	-1.000005001	2	.00000	EN15032				
1508- EN15032		5002	2	0.58778	5003	2	0.95105				
1509- MPC	1	48	3	-1.000005001	3	1.00000	EN15033				
1510- EN15033		5002	3	0.80901	5003	3	0.30901				
1511- MPC	1	48	4	-1.000005001	4	.00000	EN15034				
1512- EN15034		5002	4	0.58778	5003	4	0.95105				
1513- MPC	1	48	5	-1.000005001	5	1.00000	EN15035				
1514- EN15035		5002	5	0.80901	5003	5	0.30901				
1515- MPC	1	48	6	-1.000005001	6	.00000	EN15036				
1516- EN15036		5002	6	0.58778	5003	6	0.95105				
1517- MPC	1	49	1	-1.000005001	1	1.00000	EN15041				
1518- EN15041		5002	1	0.58778	5003	1	0.30901				
1519- MPC	1	49	2	-1.000005001	2	.00000	EN15042				
1520- EN15042		5002	2	0.80901	5003	2	0.95105				
1521- MPC	1	49	3	-1.000005001	3	1.00000	EN15043				
1522- EN15043		5002	3	0.58778	5003	3	0.30901				
1523- MPC	1	49	4	-1.000005001	4	.00000	EN15044				
1524- EN15044		5002	4	0.80901	5003	4	0.95105				
1525- MPC	1	49	5	-1.000005001	5	1.00000	EN15045				
1526- EN15045		5002	5	0.58778	5003	5	0.30901				
1527- MPC	1	49	6	-1.000005001	6	.00000	EN15046				
1528- EN15046		5002	6	0.80901	5003	6	0.95105				
1529- MPC	1	50	1	-1.000005001	1	1.00000	EN15051				
1530- EN15051		5002	1	0.30901	5003	1	0.80901				
1531- MPC	1	50	2	-1.000005001	2	.00000	EN15052				
1532- EN15052		5002	2	0.95105	5003	2	0.58778				
1533- MPC	1	50	3	-1.000005001	3	1.00000	EN15053				
1534- EN15053		5002	3	0.30901	5003	3	0.80901				
1535- MPC	1	50	4	-1.000005001	4	.00000	EN15054				
1536- EN15054		5002	4	0.95105	5003	4	0.58778				
1537- MPC	1	50	5	-1.000005001	5	1.00000	EN15055				
1538- EN15055		5002	5	0.30901	5003	5	0.80901				
1539- MPC	1	50	6	-1.000005001	6	.00000	EN15056				
1540- EN15056		5002	6	0.95105	5003	6	0.58778				
1541- MPC	1	51	1	-1.000005001	1	1.00000	EN15061				
1542- EN15061		5002	1	0.00000	5003	1	1.00000				
1543- MPC	1	51	2	-1.000005001	2	.00000	EN15062				
1544- EN15062		5002	2	1.00000	5003	2	0.00000				
1545- MPC	1	51	3	-1.000005001	3	1.00000	EN15063				
1546- EN15063		5002	3	0.00000	5003	3	1.00000				
1547- MPC	1	51	4	-1.000005001	4	.00000	EN15064				
1548- EN15064		5002	4	1.00000	5003	4	0.00000				
1549- MPC	1	51	5	-1.000005001	5	1.00000	EN15065				
1550- EN15065		5002	5	0.00000	5003	5	1.00000				

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1551- MPC	1	51	6	-1.000005001	6	.00000	6M15066				
1552- 6M15066			5002	6 1.00000	5003	6 0.00000					
1553- MPC	1	52	1	-1.000005001	1	1.00000	6M15071				
1554- 6M15071			5002	1-0.30901	5003	1-0.80901					
1555- MPC	1	52	2	-1.000005001	2	.00000	6M15072				
1556- 6M15072			5002	2 0.95105	5003	2-0.52778					
1557- MPC	1	52	3	-1.000005001	3	1.00000	6M15073				
1558- 6M15073			5002	3-0.30901	5003	3-0.80901					
1559- MPC	1	52	4	-1.000005001	4	.00000	6M15074				
1560- 6M15074			5002	4 0.95105	5003	4-0.52778					
1561- MPC	1	52	5	-1.000005001	5	1.00000	6M15075				
1562- 6M15075			5002	5-0.30901	5003	5-0.80901					
1563- MPC	1	52	6	-1.000005001	6	.00000	6M15076				
1564- 6M15076			5002	6 0.95105	5003	6-0.52778					
1565- MPC	1	53	1	-1.000005001	1	1.00000	6M15081				
1566- 6M15081			5002	1-0.52778	5003	1-0.30901					
1567- MPC	1	53	2	-1.000005001	2	.00000	6M15082				
1568- 6M15082			5002	2 0.80901	5003	2-0.95105					
1569- MPC	1	53	3	-1.000005001	3	1.00000	6M15083				
1570- 6M15083			5002	3-0.52778	5003	3-0.30901					
1571- MPC	1	53	4	-1.000005001	4	.00000	6M15084				
1572- 6M15084			5002	4 0.80901	5003	4-0.95105					
1573- MPC	1	53	5	-1.000005001	5	1.00000	6M15085				
1574- 6M15085			5002	5-0.52778	5003	5-0.30901					
1575- MPC	1	53	6	-1.000005001	6	.00000	6M15086				
1576- 6M15086			5002	6 0.80901	5003	6-0.95105					
1577- MPC	1	54	1	-1.000005001	1	1.00000	6M15091				
1578- 6M15091			5002	1-0.80901	5003	1 0.30901					
1579- MPC	1	54	2	-1.000005001	2	.00000	6M15092				
1580- 6M15092			5002	2 0.52778	5003	2-0.95105					
1581- MPC	1	54	3	-1.000005001	3	1.00000	6M15093				
1582- 6M15093			5002	3-0.80901	5003	3 0.30901					
1583- MPC	1	54	4	-1.000005001	4	.00000	6M15094				
1584- 6M15094			5002	4 0.52778	5003	4-0.95105					
1585- MPC	1	54	5	-1.000005001	5	1.00000	6M15095				
1586- 6M15095			5002	5-0.80901	5003	5 0.30901					
1587- MPC	1	54	6	-1.000005001	6	.00000	6M15096				
1588- 6M15096			5002	6 0.52778	5003	6-0.95105					
1589- MPC	1	55	1	-1.000005001	1	1.00000	6M15101				
1590- 6M15101			5002	1-0.95105	5003	1 0.80901					
1591- MPC	1	55	2	-1.000005001	2	.00000	6M15102				
1592- 6M15102			5002	2 0.30901	5003	2-0.52778					
1593- MPC	1	55	3	-1.000005001	3	1.00000	6M15103				
1594- 6M15103			5002	3-0.95105	5003	3 0.80901					
1595- MPC	1	55	4	-1.000005001	4	.00000	6M15104				
1596- 6M15104			5002	4 0.30901	5003	4-0.52778					
1597- MPC	1	55	5	-1.000005001	5	1.00000	6M15105				
1598- 6M15105			5002	5-0.95105	5003	5 0.80901					
1599- MPC	1	55	6	-1.000005001	6	.00000	6M15106				
1600- 6M15106			5002	6 0.30901	5003	6-0.52778					



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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1601- MPC	1	56	1	-1.000005001	1	1.00000	EN15111				
1602- EN15111		5002	1-1.00000	5003	1	1.00000					
1603- MPC	1	56	2	-1.000005001	2	.00000	EN15112				
1604- EN15112		5002	2 0.00000	5003	2-0.00000						
1605- MPC	1	56	3	-1.000005001	3	1.00000	EN15113				
1606- EN15113		5002	3-1.00000	5003	3 1.00000						
1607- MPC	1	56	4	-1.000005001	4	.00000	EN15114				
1608- EN15114		5002	4 0.00000	5003	4-0.00000						
1609- MPC	1	56	5	-1.000005001	5	1.00000	EN15115				
1610- EN15115		5002	5-1.00000	5003	5 1.00000						
1611- MPC	1	56	6	-1.000005001	6	.00000	EN15116				
1612- EN15116		5002	6 0.00000	5003	6-0.00000						
1613- MPC	1	57	1	-1.000006001	1	1.00000	EN16011				
1614- EN16011		6002	1 1.00000	6003	1 1.00000						
1615- MPC	1	57	2	-1.000006001	2	.00000	EN16012				
1616- EN16012		6002	2 0.00000	6003	2 0.00000						
1617- MPC	1	57	3	-1.000006001	3	1.00000	EN16013				
1618- EN16013		6002	3 1.00000	6003	3 1.00000						
1619- MPC	1	57	4	-1.000006001	4	.00000	EN16014				
1620- EN16014		6002	4 0.00000	6003	4 0.00000						
1621- MPC	1	57	5	-1.000006001	5	1.00000	EN16015				
1622- EN16015		6002	5 1.00000	6003	5 1.00000						
1623- MPC	1	57	6	-1.000006001	6	.00000	EN16016				
1624- EN16016		6002	6 0.00000	6003	6 0.00000						
1625- MPC	1	58	1	-1.000006001	1	1.00000	EN16021				
1626- EN16021		6002	1 0.95105	6003	1 0.80901						
1627- MPC	1	58	2	-1.000006001	2	.00000	EN16022				
1628- EN16022		6002	2 0.30901	6003	2 0.58778						
1629- MPC	1	58	3	-1.000006001	3	1.00000	EN16023				
1630- EN16023		6002	3 0.95105	6003	3 0.80901						
1631- MPC	1	58	4	-1.000006001	4	.00000	EN16024				
1632- EN16024		6002	4 0.30901	6003	4 0.58778						
1633- MPC	1	58	5	-1.000006001	5	1.00000	EN16025				
1634- EN16025		6002	5 0.95105	6003	5 0.80901						
1635- MPC	1	58	6	-1.000006001	6	.00000	EN16026				
1636- EN16026		6002	6 0.30901	6003	6 0.58778						
1637- MPC	1	59	1	-1.000006001	1	1.00000	EN16031				
1638- EN16031		6002	1 0.80901	6003	1 0.30901						
1639- MPC	1	59	2	-1.000006001	2	.00000	EN16032				
1640- EN16032		6002	2 0.58778	6003	2 0.95105						
1641- MPC	1	59	3	-1.000006001	3	1.00000	EN16033				
1642- EN16033		6002	3 0.80901	6003	3 0.30901						
1643- MPC	1	59	4	-1.000006001	4	.00000	EN16034				
1644- EN16034		6002	4 0.58778	6003	4 0.95105						
1645- MPC	1	59	5	-1.000006001	5	1.00000	EN16035				
1646- EN16035		6002	5 0.80901	6003	5 0.30901						
1647- MPC	1	59	6	-1.000006001	6	.00000	EN16036				
1648- EN16036		6002	6 0.58778	6003	6 0.95105						
1649- MPC	1	60	1	-1.000006001	1	1.00000	EN16041				
1650- EN16041		6002	1 0.58778	6003	1-0.30901						

SORTED BULK DATA ECHO									
CARD	1	2	3	4	5	6	7	8	9
COUNT	1	2	3	4	5	6	7	8	9
1651- MPC	1	60	2		-1.000006001	2		.00000	CM16042
1652- CM16042			6002		2 0.80901	6003		2 0.95105	
1653- MPC	1	60	3		-1.000006001	3		1.00000	CM16043
1654- CM16043			6002		3 0.58778	6003		3-0.30901	
1655- MPC	1	60	4		-1.000006001	4		.00000	CM16044
1656- CM16044			6002		4 0.80901	6003		4 0.95105	
1657- MPC	1	60	5		-1.000006001	5		1.00000	CM16045
1658- CM16045			6002		5 0.58778	6003		5-0.30901	
1659- MPC	1	60	6		-1.000006001	6		.00000	CM16046
1660- CM16046			6002		6 0.80901	6003		6 0.95105	
1661- MPC	1	61	1		-1.000006001	1		1.00000	CM16051
1662- CM16051			6002		1 0.30901	6003		1-0.80901	
1663- MPC	1	61	2		-1.000006001	2		.00000	CM16052
1664- CM16052			6002		2 0.95105	6003		2 0.58778	
1665- MPC	1	61	3		-1.000006001	3		1.00000	CM16053
1666- CM16053			6002		3 0.30901	6003		3-0.80901	
1667- MPC	1	61	4		-1.000006001	4		.00000	CM16054
1668- CM16054			6002		4 0.95105	6003		4 0.58778	
1669- MPC	1	61	5		-1.000006001	5		1.00000	CM16055
1670- CM16055			6002		5 0.30901	6003		5-0.80901	
1671- MPC	1	61	6		-1.000006001	6		.00000	CM16056
1672- CM16056			6002		6 0.95105	6003		6 0.58778	
1673- MPC	1	62	1		-1.000006001	1		1.00000	CM16061
1674- CM16061			6002		1 0.00000	6003		1-1.00000	
1675- MPC	1	62	2		-1.000006001	2		.00000	CM16062
1676- CM16062			6002		2 1.00000	6003		2 0.00000	
1677- MPC	1	62	3		-1.000006001	3		1.00000	CM16063
1678- CM16063			6002		3 0.00000	6003		3-1.00000	
1679- MPC	1	62	4		-1.000006001	4		.00000	CM16064
1680- CM16064			6002		4 1.00000	6003		4 0.00000	
1681- MPC	1	62	5		-1.000006001	5		1.00000	CM16065
1682- CM16065			6002		5 0.00000	6003		5-1.00000	
1683- MPC	1	62	6		-1.000006001	6		.00000	CM16066
1684- CM16066			6002		6 1.00000	6003		6 0.00000	
1685- MPC	1	63	1		-1.000006001	1		1.00000	CM16071
1686- CM16071			6002		1-0.30901	6003		1-0.80901	
1687- MPC	1	63	2		-1.000006001	2		.00000	CM16072
1688- CM16072			6002		2 0.95105	6003		2-0.58778	
1689- MPC	1	63	3		-1.000006001	3		1.00000	CM16073
1690- CM16073			6002		3-0.30901	6003		3-0.80901	
1691- MPC	1	63	4		-1.000006001	4		.00000	CM16074
1692- CM16074			6002		4 0.95105	6003		4-0.58778	
1693- MPC	1	63	5		-1.000006001	5		1.00000	CM16075
1694- CM16075			6002		5-0.30901	6003		5-0.80901	
1695- MPC	1	63	6		-1.000006001	6		.00000	CM16076
1696- CM16076			6002		6 0.95105	6003		6-0.58778	
1697- MPC	1	64	1		-1.000006001	1		1.00000	CM16081
1698- CM16081			6002		1-0.58778	6003		1-0.30901	
1699- MPC	1	64	2		-1.000006001	2		.00000	CM16082
1700- CM16082			6002		2 0.80901	6003		2-0.95105	

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SORTED BULK DATA ECHO									
CARD	1	2	3	4	5	6	7	8	9
CDUNT	1	2	3	4	5	6	7	8	9
1701- MPC	1	64	3		-1.000006001	3		1.00000	EM16083
1702- EM16083			6002		3-0.58778	6003		3-0.30901	
1703- MPC	1	64	4		-1.000006001	4		.00000	EM16084
1704- EM16084			6002		4 0.80901	6003		4-0.95105	
1705- MPC	1	64	5		-1.000006001	5		1.00000	EM16085
1706- EM16085			6002		5-0.58778	6003		5-0.30901	
1707- MPC	1	64	6		-1.000006001	6		.00000	EM16086
1708- EM16086			6002		6 0.80901	6003		6-0.95105	
1709- MPC	1	65	1		-1.000006001	1		1.00000	EM16091
1710- EM16091			6002		1-0.80901	6003		1 0.30901	
1711- MPC	1	65	2		-1.000006001	2		.00000	EM16092
1712- EM16092			6002		2 0.58778	6003		2-0.95105	
1713- MPC	1	65	3		-1.000006001	3		1.00000	EM16093
1714- EM16093			6002		3-0.80901	6003		3 0.30901	
1715- MPC	1	65	4		-1.000006001	4		.00000	EM16094
1716- EM16094			6002		4 0.58778	6003		4-0.95105	
1717- MPC	1	65	5		-1.000006001	5		1.00000	EM16095
1718- EM16095			6002		5-0.80901	6003		5 0.30901	
1719- MPC	1	65	6		-1.000006001	6		.00000	EM16096
1720- EM16096			6002		6 0.58778	6003		6-0.95105	
1721- MPC	1	66	1		-1.000006001	1		1.00000	EM16101
1722- EM16101			6002		1-0.95105	6003		1 0.80901	
1723- MPC	1	66	2		-1.000006001	2		.00000	EM16102
1724- EM16102			6002		2 0.30901	6003		2-0.58778	
1725- MPC	1	66	3		-1.000006001	3		1.00000	EM16103
1726- EM16103			6002		3-0.95105	6003		3 0.80901	
1727- MPC	1	66	4		-1.000006001	4		.00000	EM16104
1728- EM16104			6002		4 0.30901	6003		4-0.58778	
1729- MPC	1	66	5		-1.000006001	5		1.00000	EM16105
1730- EM16105			6002		5-0.95105	6003		5 0.80901	
1731- MPC	1	66	6		-1.000006001	6		.00000	EM16106
1732- EM16106			6002		6 0.30901	6003		6-0.58778	
1733- MPC	1	67	1		-1.000006001	1		1.00000	EM16111
1734- EM16111			6002		1-1.00000	6003		1 1.00000	
1735- MPC	1	67	2		-1.000006001	2		.00000	EM16112
1736- EM16112			6002		2 0.00000	6003		2-0.00000	
1737- MPC	1	67	3		-1.000006001	3		1.00000	EM16113
1738- EM16113			6002		3-1.00000	6003		3 1.00000	
1739- MPC	1	67	4		-1.000006001	4		.00000	EM16114
1740- EM16114			6002		4 0.00000	6003		4-0.00000	
1741- MPC	1	67	5		-1.000006001	5		1.00000	EM16115
1742- EM16115			6002		5-1.00000	6003		5 1.00000	
1743- MPC	1	67	6		-1.000006001	6		.00000	EM16116
1744- EM16116			6002		6 0.00000	6003		6-0.00000	
1745- MPC	1	68	1		-1.000007001	1		1.00000	EM17011
1746- EM17011			7002		1 1.00000	7003		1 1.00000	
1747- MPC	1	68	2		-1.000007001	2		.00000	EM17012
1748- EM17012			7002		2 0.00000	7003		2 0.00000	
1749- MPC	1	68	3		-1.000007001	3		1.00000	EM17013
1750- EM17013			7002		3 1.00000	7003		3 1.00000	

AXISYMMETRIC CIRC. CYL. WITH FLUID  
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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1751- MPC	1	68	4	-1.000007001	4	.00000	6M17014				
1752- 6M17014			7002	4 0.00000	7003	4 0.00000					
1753- MPC	1	68	5	-1.000007001	5	1.00000	6M17015				
1754- 6M17015			7002	5 1.00000	7003	5 1.00000					
1755- MPC	1	68	6	-1.000007001	6	.00000	6M17016				
1756- 6M17016			7002	6 0.00000	7003	6 0.00000					
1757- MPC	1	69	1	-1.000007001	1	1.00000	6M17021				
1758- 6M17021			7002	1 0.95105	7003	1 0.80901					
1759- MPC	1	69	2	-1.000007001	2	.00000	6M17022				
1760- 6M17022			7002	2 0.30901	7003	2 0.58778					
1761- MPC	1	69	3	-1.000007001	3	1.00000	6M17023				
1762- 6M17023			7002	3 0.95105	7003	3 0.80901					
1763- MPC	1	69	4	-1.000007001	4	.00000	6M17024				
1764- 6M17024			7002	4 0.30901	7003	4 0.58778					
1765- MPC	1	69	5	-1.000007001	5	1.00000	6M17025				
1766- 6M17025			7002	5 0.95105	7003	5 0.80901					
1767- MPC	1	69	6	-1.000007001	6	.00000	6M17026				
1768- 6M17026			7002	6 0.30901	7003	6 0.58778					
1769- MPC	1	70	1	-1.000007001	1	1.00000	6M17031				
1770- 6M17031			7002	1 0.80901	7003	1 0.30901					
1771- MPC	1	70	2	-1.000007001	2	.00000	6M17032				
1772- 6M17032			7002	2 0.58778	7003	2 0.95105					
1773- MPC	1	70	3	-1.000007001	3	1.00000	6M17033				
1774- 6M17033			7002	3 0.80901	7003	3 0.30901					
1775- MPC	1	70	4	-1.000007001	4	.00000	6M17034				
1776- 6M17034			7002	4 0.58778	7003	4 0.95105					
1777- MPC	1	70	5	-1.000007001	5	1.00000	6M17035				
1778- 6M17035			7002	5 0.80901	7003	5 0.30901					
1779- MPC	1	70	6	-1.000007001	6	.00000	6M17036				
1780- 6M17036			7002	6 0.58778	7003	6 0.95105					
1781- MPC	1	71	1	-1.000007001	1	1.00000	6M17041				
1782- 6M17041			7002	1 0.58778	7003	1-0.30901					
1783- MPC	1	71	2	-1.000007001	2	.00000	6M17042				
1784- 6M17042			7002	2 0.80901	7003	2 0.95105					
1785- MPC	1	71	3	-1.000007001	3	1.00000	6M17043				
1786- 6M17043			7002	3 0.58778	7003	3-0.30901					
1787- MPC	1	71	4	-1.000007001	4	.00000	6M17044				
1788- 6M17044			7002	4 0.80901	7003	4 0.95105					
1789- MPC	1	71	5	-1.000007001	5	1.00000	6M17045				
1790- 6M17045			7002	5 0.58778	7003	5-0.30901					
1791- MPC	1	71	6	-1.000007001	6	.00000	6M17046				
1792- 6M17046			7002	6 0.80901	7003	6 0.95105					
1793- MPC	1	72	1	-1.000007001	1	1.00000	6M17051				
1794- 6M17051			7002	1 0.30901	7003	1-0.80901					
1795- MPC	1	72	2	-1.000007001	2	.00000	6M17052				
1796- 6M17052			7002	2 0.95105	7003	2 0.58778					
1797- MPC	1	72	3	-1.000007001	3	1.00000	6M17053				
1798- 6M17053			7002	3 0.30901	7003	3-0.80901					
1799- MPC	1	72	4	-1.000007001	4	.00000	6M17054				
1800- 6M17054			7002	4 0.95105	7003	4 0.58778					

S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
1801- MPC	1	72	5		-1.000007001	5		1.00000		EM17055
1802- EM17055			7002		5 0.30901	7003		5-0.80901		
1803- MPC	1	72	6		-1.000007001	6		.00000		EM17056
1804- EM17056			7002		6 0.95105	7003		6 0.58778		
1805- MPC	1	73	1		-1.000007001	1		1.00000		EM17061
1806- EM17061			7002		1 0.00000	7003		1-1.00000		
1807- MPC	1	73	2		-1.000007001	2		.00000		EM17062
1808- EM17062			7002		2 1.00000	7003		2 0.00000		
1809- MPC	1	73	3		-1.000007001	3		1.00000		EM17063
1810- EM17063			7002		3 0.00000	7003		3-1.00000		
1811- MPC	1	73	4		-1.000007001	4		.00000		EM17064
1812- EM17064			7002		4 1.00000	7003		4 0.00000		
1813- MPC	1	73	5		-1.000007001	5		1.00000		EM17065
1814- EM17065			7002		5 0.00000	7003		5-1.00000		
1815- MPC	1	73	6		-1.000007001	6		.00000		EM17066
1816- EM17066			7002		6 1.00000	7003		6 0.00000		
1817- MPC	1	74	1		-1.000007001	1		1.00000		EM17071
1818- EM17071			7002		1-0.30901	7003		1-0.80901		
1819- MPC	1	74	2		-1.000007001	2		.00000		EM17072
1820- EM17072			7002		2 0.95105	7003		2-0.58778		
1821- MPC	1	74	3		-1.000007001	3		1.00000		EM17073
1822- EM17073			7002		3-0.30901	7003		3-0.80901		
1823- MPC	1	74	4		-1.000007001	4		.00000		EM17074
1824- EM17074			7002		4 0.95105	7003		4-0.58778		
1825- MPC	1	74	5		-1.000007001	5		1.00000		EM17075
1826- EM17075			7002		5-0.30901	7003		5-0.80901		
1827- MPC	1	74	6		-1.000007001	6		.00000		EM17076
1828- EM17076			7002		6 0.95105	7003		6-0.58778		
1829- MPC	1	75	1		-1.000007001	1		1.00000		EM17081
1830- EM17081			7002		1-0.58778	7003		1-0.30901		
1831- MPC	1	75	2		-1.000007001	2		.00000		EM17082
1832- EM17082			7002		2 0.80901	7003		2-0.95105		
1833- MPC	1	75	3		-1.000007001	3		1.00000		EM17083
1834- EM17083			7002		3-0.58778	7003		3-0.30901		
1835- MPC	1	75	4		-1.000007001	4		.00000		EM17084
1836- EM17084			7002		4 0.80901	7003		4-0.95105		
1837- MPC	1	75	5		-1.000007001	5		1.00000		EM17085
1838- EM17085			7002		5-0.58778	7003		5-0.30901		
1839- MPC	1	75	6		-1.000007001	6		.00000		EM17086
1840- EM17086			7002		6 0.80901	7003		6-0.95105		
1841- MPC	1	76	1		-1.000007001	1		1.00000		EM17091
1842- EM17091			7002		1-0.80901	7003		1 0.30901		
1843- MPC	1	76	2		-1.000007001	2		.00000		EM17092
1844- EM17092			7002		2 0.58778	7003		2-0.95105		
1845- MPC	1	76	3		-1.000007001	3		1.00000		EM17093
1846- EM17093			7002		3-0.80901	7003		3 0.30901		
1847- MPC	1	76	4		-1.000007001	4		.00000		EM17094
1848- EM17094			7002		4 0.58778	7003		4-0.95105		
1849- MPC	1	76	5		-1.000007001	5		1.00000		EM17095
1850- EM17095			7002		5-0.80901	7003		5 0.30901		

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CARD		S O R T E D B U L K D A T A E C H O																			
COUNT	.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
1851-	MPC	1		76		6				-1.000007001		6				.00000				EM17096	
1852-	EM17096					7002				6 0.58778		7003				6-0.95105					
1853-	MPC	1		77		1				-1.000007001		1				1.00000				EM17101	
1854-	EM17101					7002				1-0.95105		7003				1 0.80901					
1855-	MPC	1		77		2				-1.000007001		2				.00000				EM17102	
1856-	EM17102					7002				2 0.30901		7003				2-0.58778					
1857-	MPC	1		77		3				-1.000007001		3				1.00000				EM17103	
1858-	EM17103					7002				3-0.95105		7003				3 0.80901					
1859-	MPC	1		77		4				-1.000007001		4				.00000				EM17104	
1860-	EM17104					7002				4 0.30901		7003				4-0.58778					
1861-	MPC	1		77		5				-1.000007001		5				1.00000				EM17105	
1862-	EM17105					7002				5-0.95105		7003				5 0.80901					
1863-	MPC	1		77		6				-1.000007001		6				.00000				EM17106	
1864-	EM17106					7002				6 0.30901		7003				6-0.58778					
1865-	MPC	1		78		1				-1.000007001		1				1.00000				EM17111	
1866-	EM17111					7002				1-1.00000		7003				1 1.00000					
1867-	MPC	1		78		2				-1.000007001		2				.00000				EM17112	
1868-	EM17112					7002				2 0.00000		7003				2-0.00000					
1869-	MPC	1		78		3				-1.000007001		3				1.00000				EM17113	
1870-	EM17113					7002				3-1.00000		7003				3 1.00000					
1871-	MPC	1		78		4				-1.000007001		4				.00000				EM17114	
1872-	EM17114					7002				4 0.30901		7003				4-0.00000					
1873-	MPC	1		78		5				-1.000007001		5				1.00000				EM17115	
1874-	EM17115					7002				5-1.00000		7003				5 1.00000					
1875-	MPC	1		78		6				-1.000007001		6				.00000				EM17116	
1876-	EM17116					7002				6 0.00000		7003				6-0.00000					
1877-	MPC	1		79		1				-1.000008001		1				1.00000				EM18011	
1878-	EM18011					8002				1 1.00000		8003				1 1.00000					
1879-	MPC	1		79		2				-1.000008001		2				.00000				EM18012	
1880-	EM18012					8002				2 0.00000		8003				2 0.00000					
1881-	MPC	1		79		3				-1.000008001		3				1.00000				EM18013	
1882-	EM18013					8002				3 1.00000		8003				3 1.00000					
1883-	MPC	1		79		4				-1.000008001		4				.00000				EM18014	
1884-	EM18014					8002				4 0.00000		8003				4 0.00000					
1885-	MPC	1		79		5				-1.000008001		5				1.00000				EM18015	
1886-	EM18015					8002				5 1.00000		8003				5 1.00000					
1887-	MPC	1		79		6				-1.000008001		6				.00000				EM18016	
1888-	EM18016					8002				6 0.00000		8003				6 0.00000					
1889-	MPC	1		80		1				-1.000008001		1				1.00000				EM18021	
1890-	EM18021					8002				1 0.95105		8003				1 0.80901					
1891-	MPC	1		80		2				-1.000008001		2				.00000				EM18022	
1892-	EM18022					8002				2 0.30901		8003				2 0.58778					
1893-	MPC	1		80		3				-1.000008001		3				1.00000				EM18023	
1894-	EM18023					8002				3 0.95105		8003				3 0.80901					
1895-	MPC	1		80		4				-1.000008001		4				.00000				EM18024	
1896-	EM18024					8002				4 0.30901		8003				4 0.58778					
1897-	MPC	1		80		5				-1.000008001		5				1.00000				EM18025	
1898-	EM18025					8002				5 0.95105		8003				5 0.80901					
1899-	MPC	1		80		6				-1.000008001		6				.00000				EM18026	
1900-	EM18026					8002				6 0.30901		8003				6 0.58778					

SORTED BULK DATA ECHO									
CARD	1	2	3	4	5	6	7	8	9
CJUNT	1	2	3	4	5	6	7	8	9
1901- MPC	1	81	1		-1.000008001	1		1.00000	EM18031
1902- EM18031			8002		1 0.80901	8003		1 0.30901	
1903- MPC	1	81	2		-1.000008001	2		.00000	EM18032
1904- EM18032			8002		2 0.58778	8003		2 0.95105	
1905- MPC	1	81	3		-1.000008001	3		1.00000	EM18033
1906- EM18033			8002		3 0.80901	8003		3 0.30901	
1907- MPC	1	81	4		-1.000008001	4		.00000	EM18034
1908- EM18034			8002		4 0.58778	8003		4 0.95105	
1909- MPC	1	81	5		-1.000008001	5		1.00000	EM18035
1910- EM18035			8002		5 0.80901	8003		5 0.30901	
1911- MPC	1	81	6		-1.000008001	6		.00000	EM18036
1912- EM18036			8002		6 0.58778	8003		6 0.95105	
1913- MPC	1	82	1		-1.000008001	1		1.00000	EM18041
1914- EM18041			8002		1 0.58778	8003		1-0.30901	
1915- MPC	1	82	2		-1.000008001	2		.00000	EM18042
1916- EM18042			8002		2 0.80901	8003		2 0.95105	
1917- MPC	1	82	3		-1.000008001	3		1.00000	EM18043
1918- EM18043			8002		3 0.58778	8003		3-0.30901	
1919- MPC	1	82	4		-1.000008001	4		.00000	EM18044
1920- EM18044			8002		4 0.80901	8003		4 0.95105	
1921- MPC	1	82	5		-1.000008001	5		1.00000	EM18045
1922- EM18045			8002		5 0.58778	8003		5-0.30901	
1923- MPC	1	82	6		-1.000008001	6		.00000	EM18046
1924- EM18046			8002		6 0.80901	8003		6 0.95105	
1925- MPC	1	83	1		-1.000008001	1		1.00000	EM18051
1926- EM18051			8002		1 0.30901	8003		1-0.80901	
1927- MPC	1	83	2		-1.000008001	2		.00000	EM18052
1928- EM18052			8002		2 0.95105	8003		2 0.58778	
1929- MPC	1	83	3		-1.000008001	3		1.00000	EM18053
1930- EM18053			8002		3 0.30901	8003		3-0.80901	
1931- MPC	1	83	4		-1.000008001	4		.00000	EM18054
1932- EM18054			8002		4 0.95105	8003		4 0.58778	
1933- MPC	1	83	5		-1.000008001	5		1.00000	EM18055
1934- EM18055			8002		5 0.30901	8003		5-0.80901	
1935- MPC	1	83	6		-1.000008001	6		.00000	EM18056
1936- EM18056			8002		6 0.95105	8003		6 0.58778	
1937- MPC	1	84	1		-1.000008001	1		1.00000	EM18061
1938- EM18061			8002		1 0.00000	8003		1-1.00000	
1939- MPC	1	84	2		-1.000008001	2		.00000	EM18062
1940- EM18062			8002		2 1.00000	8003		2 0.00000	
1941- MPC	1	84	3		-1.000008001	3		1.00000	EM18063
1942- EM18063			8002		3 0.00000	8003		3-1.00000	
1943- MPC	1	84	4		-1.000008001	4		.00000	EM18064
1944- EM18064			8002		4 1.00000	8003		4 0.00000	
1945- MPC	1	84	5		-1.000008001	5		1.00000	EM18065
1946- EM18065			8002		5 0.00000	8003		5-1.00000	
1947- MPC	1	84	6		-1.000008001	6		.00000	EM18066
1948- EM18066			8002		6 1.00000	8003		6 0.00000	
1949- MPC	1	85	1		-1.000008001	1		1.00000	EM18071
1950- EM18071			8002		1-0.30901	8003		1-0.80901	

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
1951- MPC	1	85	2							-1.000008001	2					.000000				CM18072	
1952- CM18072				8002						2 0.95105	8003					2-0.5E778					
1953- MPC	1	85	3							-1.000008001	3					1.000000				CM18073	
1954- CM18073				8002						3-0.30901	8003					3-0.80901					
1955- MPC	1	85	4							-1.000008001	4					.000000				CM18074	
1956- CM18074				8002						4 0.95105	8003					4-0.5E778					
1957- MPC	1	85	5							-1.000008001	5					1.000000				CM18075	
1958- CM18075				8002						5-0.30901	8003					5-0.80901					
1959- MPC	1	85	6							-1.000008001	6					.000000				CM18076	
1960- CM18076				8002						6 0.95105	8003					6-0.5E778					
1961- MPC	1	86	1							-1.000008001	1					1.000000				CM18081	
1962- CM18081				8002						1-0.5E778	8003					1-0.30901					
1963- MPC	1	86	2							-1.000008001	2					.000000				CM18082	
1964- CM18082				8002						2 0.80901	8003					2-0.95105					
1965- MPC	1	86	3							-1.000008001	3					1.000000				CM18083	
1966- CM18083				8002						3-0.5E778	8003					3-0.30901					
1967- MPC	1	86	4							-1.000008001	4					.000000				CM18084	
1968- CM18084				8002						4 0.80901	8003					4-0.95105					
1969- MPC	1	86	5							-1.000008001	5					1.000000				CM18085	
1970- CM18085				8002						5-0.5E778	8003					5-0.30901					
1971- MPC	1	86	6							-1.000008001	6					.000000				CM18086	
1972- CM18086				8002						6 0.80901	8003					6-0.95105					
1973- MPC	1	87	1							-1.000008001	1					1.000000				CM18091	
1974- CM18091				8002						1-0.80901	8003					1 0.30901					
1975- MPC	1	87	2							-1.000008001	2					.000000				CM18092	
1976- CM18092				8002						2 0.5E778	8003					2-0.95105					
1977- MPC	1	87	3							-1.000008001	3					1.000000				CM18093	
1978- CM18093				8002						3-0.80901	8003					3 0.30901					
1979- MPC	1	87	4							-1.000008001	4					.000000				CM18094	
1980- CM18094				8002						4 0.5E778	8003					4-0.95105					
1981- MPC	1	87	5							-1.000008001	5					1.000000				CM18095	
1982- CM18095				8002						5-0.80901	8003					5 0.30901					
1983- MPC	1	87	6							-1.000008001	6					.000000				CM18096	
1984- CM18096				8002						6 0.5E778	8003					6-0.95105					
1985- MPC	1	88	1							-1.000008001	1					1.000000				CM18101	
1986- CM18101				8002						1-0.95105	8003					1 0.80901					
1987- MPC	1	88	2							-1.000008001	2					.000000				CM18102	
1988- CM18102				8002						2 0.30901	8003					2-0.5E778					
1989- MPC	1	88	3							-1.000008001	3					1.000000				CM18103	
1990- CM18103				8002						3-0.95105	8003					3 0.80901					
1991- MPC	1	88	4							-1.000008001	4					.000000				CM18104	
1992- CM18104				8002						4 0.30901	8003					4-0.5E778					
1993- MPC	1	88	5							-1.000008001	5					1.000000				CM18105	
1994- CM18105				8002						5-0.95105	8003					5 0.80901					
1995- MPC	1	88	6							-1.000008001	6					.000000				CM18106	
1996- CM18106				8002						6 0.30901	8003					6-0.5E778					
1997- MPC	1	89	1							-1.000008001	1					1.000000				CM18111	
1998- CM18111				8002						1-1.00000	8003					1 1.00000					
1999- MPC	1	89	2							-1.000008001	2					.000000				CM18112	
2000- CM18112				8002						2 0.00000	8003					2-0.00000					



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CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	..	2	..	3	..	4	..	5	..
2001- MPC	1	89	3		-1.000008001	3		1.00000		EM18113
2002- EM18113			8002		3-1.00000	8003		3 1.00000		
2003- MPC	1	89	4		-1.000008001	4		.00000		EM18114
2004- EM18114			8002		4 0.00000	8003		4-0.00000		
2005- MPC	1	89	5		-1.000008001	5		1.00000		EM18115
2006- EM18115			8002		5-1.00000	8003		5 1.00000		
2007- MPC	1	89	6		-1.000008001	6		.00000		EM18116
2008- EM18116			8002		6 0.00000	8003		6-0.00000		
2009- MPC	1	90	1		-1.000009001	1		1.00000		EM19011
2010- EM19011			9002		1 1.00000	9003		1 1.00000		
2011- MPC	1	90	2		-1.000009001	2		.00000		EM19012
2012- EM19012			9002		2 0.00000	9003		2 0.00000		
2013- MPC	1	90	3		-1.000009001	3		1.00000		EM19013
2014- EM19013			9002		3 1.00000	9003		3 1.00000		
2015- MPC	1	90	4		-1.000009001	4		.00000		EM19014
2016- EM19014			9002		4 0.00000	9003		4 0.00000		
2017- MPC	1	90	5		-1.000009001	5		1.00000		EM19015
2018- EM19015			9002		5 1.00000	9003		5 1.00000		
2019- MPC	1	90	6		-1.000009001	6		.00000		EM19016
2020- EM19016			9002		6 0.00000	9003		6 0.00000		
2021- MPC	1	91	1		-1.000009001	1		1.00000		EM19021
2022- EM19021			9002		1 0.95105	9003		1 0.80901		
2023- MPC	1	91	2		-1.000009001	2		.00000		EM19022
2024- EM19022			9002		2 0.30901	9003		2 0.58778		
2025- MPC	1	91	3		-1.000009001	3		1.00000		EM19023
2026- EM19023			9002		3 0.95105	9003		3 0.80901		
2027- MPC	1	91	4		-1.000009001	4		.00000		EM19024
2028- EM19024			9002		4 0.30901	9003		4 0.58778		
2029- MPC	1	91	5		-1.000009001	5		1.00000		EM19025
2030- EM19025			9002		5 0.95105	9003		5 0.80901		
2031- MPC	1	91	6		-1.000009001	6		.00000		EM19026
2032- EM19026			9002		6 0.30901	9003		6 0.58778		
2033- MPC	1	92	1		-1.000009001	1		1.00000		EM19031
2034- EM19031			9002		1 0.80901	9003		1 0.30901		
2035- MPC	1	92	2		-1.000009001	2		.00000		EM19032
2036- EM19032			9002		2 0.58778	9003		2 0.95105		
2037- MPC	1	92	3		-1.000009001	3		1.00000		EM19033
2038- EM19033			9002		3 0.80901	9003		3 0.30901		
2039- MPC	1	92	4		-1.000009001	4		.00000		EM19034
2040- EM19034			9002		4 0.58778	9003		4 0.95105		
2041- MPC	1	92	5		-1.000009001	5		1.00000		EM19035
2042- EM19035			9002		5 0.80901	9003		5 0.30901		
2043- MPC	1	92	6		-1.000009001	6		.00000		EM19036
2044- EM19036			9002		6 0.58778	9003		6 0.95105		
2045- MPC	1	93	1		-1.000009001	1		1.00000		EM19041
2046- EM19041			9002		1 0.58778	9003		1-0.30901		
2047- MPC	1	93	2		-1.000009001	2		.00000		EM19042
2048- EM19042			9002		2 0.80901	9003		2 0.95105		
2049- MPC	1	93	3		-1.000009001	3		1.00000		EM19043
2050- EM19043			9002		3 0.58778	9003		3-0.30901		

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2051- MPC	1	93	4	-1.000009001	4	.00000	EM19044				
2052- EM19044		9002	4 0.80901	9003	4 0.95105						
2053- MPC	1	93	5	-1.000009001	5	1.00000	EM19045				
2054- EM19045		9002	5 0.58778	9003	5-0.30901						
2055- MPC	1	93	6	-1.000009001	6	.00000	EM19046				
2056- EM19046		9002	6 0.80901	9003	6 0.95105						
2057- MPC	1	94	1	-1.000009001	1	1.00000	EM19051				
2058- EM19051		9002	1 0.30901	9003	1-0.80901						
2059- MPC	1	94	2	-1.000009001	2	.00000	EM19052				
2060- EM19052		9002	2 0.95105	9003	2 0.58778						
2061- MPC	1	94	3	-1.000009001	3	1.00000	EM19053				
2062- EM19053		9002	3 0.30901	9003	3-0.80901						
2063- MPC	1	94	4	-1.000009001	4	.00000	EM19054				
2064- EM19054		9002	4 0.95105	9003	4 0.58778						
2065- MPC	1	94	5	-1.000009001	5	1.00000	EM19055				
2066- EM19055		9002	5 0.30901	9003	5-0.80901						
2067- MPC	1	94	6	-1.000009001	6	.00000	EM19056				
2068- EM19056		9002	6 0.95105	9003	6 0.58778						
2069- MPC	1	95	1	-1.000009001	1	1.00000	EM19061				
2070- EM19061		9002	1 0.00000	9003	1-1.00000						
2071- MPC	1	95	2	-1.000009001	2	.00000	EM19062				
2072- EM19062		9002	2 1.00000	9003	2 0.00000						
2073- MPC	1	95	3	-1.000009001	3	1.00000	EM19063				
2074- EM19063		9002	3 0.00000	9003	3-1.00000						
2075- MPC	1	95	4	-1.000009001	4	.00000	EM19064				
2076- EM19064		9002	4 1.00000	9003	4 0.00000						
2077- MPC	1	95	5	-1.000009001	5	1.00000	EM19065				
2078- EM19065		9002	5 0.00000	9003	5-1.00000						
2079- MPC	1	95	6	-1.000009001	6	.00000	EM19066				
2080- EM19066		9002	6 1.00000	9003	6 0.00000						
2081- MPC	1	96	1	-1.000009001	1	1.00000	EM19071				
2082- EM19071		9002	1-0.30901	9003	1-0.80901						
2083- MPC	1	96	2	-1.000009001	2	.00000	EM19072				
2084- EM19072		9002	2 0.95105	9003	2-0.58778						
2085- MPC	1	96	3	-1.000009001	3	1.00000	EM19073				
2086- EM19073		9002	3-0.30901	9003	3-0.80901						
2087- MPC	1	96	4	-1.000009001	4	.00000	EM19074				
2088- EM19074		9002	4 0.95105	9003	4-0.58778						
2089- MPC	1	96	5	-1.000009001	5	1.00000	EM19075				
2090- EM19075		9002	5-0.30901	9003	5-0.80901						
2091- MPC	1	96	6	-1.000009001	6	.00000	EM19076				
2092- EM19076		9002	6 0.95105	9003	6-0.58778						
2093- MPC	1	97	1	-1.000009001	1	1.00000	EM19081				
2094- EM19081		9002	1-0.58778	9003	1-0.30901						
2095- MPC	1	97	2	-1.000009001	2	.00000	EM19082				
2096- EM19082		9002	2 0.80901	9003	2-0.95105						
2097- MPC	1	97	3	-1.000009001	3	1.00000	EM19083				
2098- EM19083		9002	3-0.58778	9003	3-0.30901						
2099- MPC	1	97	4	-1.000009001	4	.00000	EM19084				
2100- EM19084		9002	4 0.80901	9003	4-0.95105						

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	2	3	4	5	6	7	8	9	10
2101- MPC	1	97	5		-1.000009001	5		1.00000		EM19085
2102- EM19085			9002		5-0.58778	9003		5-0.30901		
2103- MPC	1	97	6		-1.000009001	6		.00000		EM19086
2104- EM19086			9002		6 0.80901	9003		6-0.95105		
2105- MPC	1	98	1		-1.000009001	1		1.00000		EM19091
2106- EM19091			9002		1-0.80901	9003		1 0.30901		
2107- MPC	1	98	2		-1.000009001	2		.00000		EM19092
2108- EM19092			9002		2 0.58778	9003		2-0.95105		
2109- MPC	1	98	3		-1.000009001	3		1.00000		EM19093
2110- EM19093			9002		3-0.80901	9003		3 0.30901		
2111- MPC	1	98	4		-1.000009001	4		.00000		EM19094
2112- EM19094			9002		4 0.58778	9003		4-0.95105		
2113- MPC	1	98	5		-1.000009001	5		1.00000		EM19095
2114- EM19095			9002		5-0.80901	9003		5 0.30901		
2115- MPC	1	98	6		-1.000009001	6		.00000		EM19096
2116- EM19096			9002		6 0.58778	9003		6-0.95105		
2117- MPC	1	99	1		-1.000009001	1		1.00000		EM19101
2118- EM19101			9002		1-0.95105	9003		1 0.80901		
2119- MPC	1	99	2		-1.000009001	2		.00000		EM19102
2120- EM19102			9002		2 0.30901	9003		2-0.58778		
2121- MPC	1	99	3		-1.000009001	3		1.00000		EM19103
2122- EM19103			9002		3-0.95105	9003		3 0.80901		
2123- MPC	1	99	4		-1.000009001	4		.00000		EM19104
2124- EM19104			9002		4 0.30901	9003		4-0.58778		
2125- MPC	1	99	5		-1.000009001	5		1.00000		EM19105
2126- EM19105			9002		5-0.95105	9003		5 0.80901		
2127- MPC	1	99	6		-1.000009001	6		.00000		EM19106
2128- EM19106			9002		6 0.30901	9003		6-0.58778		
2129- MPC	1	100	1		-1.000009001	1		1.00000		EM19111
2130- EM19111			9002		1-1.00000	9003		1 1.00000		
2131- MPC	1	100	2		-1.000009001	2		.00000		EM19112
2132- EM19112			9002		2 0.00000	9003		2-0.00000		
2133- MPC	1	100	3		-1.000009001	3		1.00000		EM19113
2134- EM19113			9002		3-1.00000	9003		3 1.00000		
2135- MPC	1	100	4		-1.000009001	4		.00000		EM19114
2136- EM19114			9002		4 0.00000	9003		4-0.00000		
2137- MPC	1	100	5		-1.000009001	5		1.00000		EM19115
2138- EM19115			9002		5-1.00000	9003		5 1.00000		
2139- MPC	1	100	6		-1.000009001	6		.00000		EM19116
2140- EM19116			9002		6 0.00000	9003		6-0.00000		
2141- MPC	1	101	1		-1.0000010001	1		1.00000		EM20011
2142- EM20011			10002		1 1.00000	10003		1 1.00000		
2143- MPC	1	101	2		-1.0000010001	2		.00000		EM20012
2144- EM20012			10002		2 0.00000	10003		2 0.00000		
2145- MPC	1	101	3		-1.0000010001	3		1.00000		EM20013
2146- EM20013			10002		3 1.00000	10003		3 1.00000		
2147- MPC	1	101	4		-1.0000010001	4		.00000		EM20014
2148- EM20014			10002		4 0.00000	10003		4 0.00000		
2149- MPC	1	101	5		-1.0000010001	5		1.00000		EM20015
2150- EM20015			10002		5 1.00000	10003		5 1.00000		

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2151- MPC	1	101	6	-1.00000	10001	6	.00000				6M20016
2152- 6M20016			10002	6	0.00000	10003	6	0.00000			
2153- MPC	1	102	1	-1.00000	10001	1	1.00000				6M20021
2154- 6M20021			10002	1	0.95105	10003	1	0.80901			
2155- MPC	1	102	2	-1.00000	10001	2	.00000				6M20022
2156- 6M20022			10002	2	0.30901	10003	2	0.52778			
2157- MPC	1	102	3	-1.00000	10001	3	1.00000				6M20023
2158- 6M20023			10002	3	0.95105	10003	3	0.80901			
2159- MPC	1	102	4	-1.00000	10001	4	.00000				6M20024
2160- 6M20024			10002	4	0.30901	10003	4	0.52778			
2161- MPC	1	102	5	-1.00000	10001	5	1.00000				6M20025
2162- 6M20025			10002	5	0.95105	10003	5	0.80901			
2163- MPC	1	102	6	-1.00000	10001	6	.00000				6M20026
2164- 6M20026			10002	6	0.30901	10003	6	0.52778			
2165- MPC	1	103	1	-1.00000	10001	1	1.00000				6M20031
2166- 6M20031			10002	1	0.80901	10003	1	0.30901			
2167- MPC	1	103	2	-1.00000	10001	2	.00000				6M20032
2168- 6M20032			10002	2	0.52778	10003	2	0.95105			
2169- MPC	1	103	3	-1.00000	10001	3	1.00000				6M20033
2170- 6M20033			10002	3	0.80901	10003	3	0.30901			
2171- MPC	1	103	4	-1.00000	10001	4	.00000				6M20034
2172- 6M20034			10002	4	0.52778	10003	4	0.95105			
2173- MPC	1	103	5	-1.00000	10001	5	1.00000				6M20035
2174- 6M20035			10002	5	0.80901	10003	5	0.30901			
2175- MPC	1	103	6	-1.00000	10001	6	.00000				6M20036
2176- 6M20036			10002	6	0.52778	10003	6	0.95105			
2177- MPC	1	104	1	-1.00000	10001	1	1.00000				6M20041
2178- 6M20041			10002	1	0.52778	10003	1	0.30901			
2179- MPC	1	104	2	-1.00000	10001	2	.00000				6M20042
2180- 6M20042			10002	2	0.80901	10003	2	0.95105			
2181- MPC	1	104	3	-1.00000	10001	3	1.00000				6M20043
2182- 6M20043			10002	3	0.52778	10003	3	0.30901			
2183- MPC	1	104	4	-1.00000	10001	4	.00000				6M20044
2184- 6M20044			10002	4	0.80901	10003	4	0.95105			
2185- MPC	1	104	5	-1.00000	10001	5	1.00000				6M20045
2186- 6M20045			10002	5	0.52778	10003	5	0.30901			
2187- MPC	1	104	6	-1.00000	10001	6	.00000				6M20046
2188- 6M20046			10002	6	0.80901	10003	6	0.95105			
2189- MPC	1	105	1	-1.00000	10001	1	1.00000				6M20051
2190- 6M20051			10002	1	0.30901	10003	1	0.80901			
2191- MPC	1	105	2	-1.00000	10001	2	.00000				6M20052
2192- 6M20052			10002	2	0.95105	10003	2	0.52778			
2193- MPC	1	105	3	-1.00000	10001	3	1.00000				6M20053
2194- 6M20053			10002	3	0.30901	10003	3	0.80901			
2195- MPC	1	105	4	-1.00000	10001	4	.00000				6M20054
2196- 6M20054			10002	4	0.95105	10003	4	0.52778			
2197- MPC	1	105	5	-1.00000	10001	5	1.00000				6M20055
2198- 6M20055			10002	5	0.30901	10003	5	0.80901			
2199- MPC	1	105	6	-1.00000	10001	6	.00000				6M20056
2200- 6M20056			10002	6	0.95105	10003	6	0.52778			

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2201- MPC	1	106	1	-1.0000010001	1	1.00000	6M20061				
2202- 6M20061		10002	1 0.00000	10003	1-1.00000						
2203- MPC	1	106	2	-1.0000010001	2	.00000	6M20062				
2204- 6M20062		10002	2 1.00000	10003	2 0.00000						
2205- MPC	1	106	3	-1.0000010001	3	1.00000	6M20063				
2206- 6M20063		10002	3 0.00000	10003	3-1.00000						
2207- MPC	1	106	4	-1.0000010001	4	.00000	6M20064				
2208- 6M20064		10002	4 1.00000	10003	4 0.00000						
2209- MPC	1	106	5	-1.0000010001	5	1.00000	6M20065				
2210- 6M20065		10002	5 0.00000	10003	5-1.00000						
2211- MPC	1	106	6	-1.0000010001	6	.00000	6M20066				
2212- 6M20066		10002	6 1.00000	10003	6 0.00000						
2213- MPC	1	107	1	-1.0000010001	1	1.00000	6M20071				
2214- 6M20071		10002	1-0.30901	10003	1-0.80901						
2215- MPC	1	107	2	-1.0000010001	2	.00000	6M20072				
2216- 6M20072		10002	2 0.95105	10003	2-0.58778						
2217- MPC	1	107	3	-1.0000010001	3	1.00000	6M20073				
2218- 6M20073		10002	3-0.30901	10003	3-0.80901						
2219- MPC	1	107	4	-1.0000010001	4	.00000	6M20074				
2220- 6M20074		10002	4 0.95105	10003	4-0.58778						
2221- MPC	1	107	5	-1.0000010001	5	1.00000	6M20075				
2222- 6M20075		10002	5-0.30901	10003	5-0.80901						
2223- MPC	1	107	6	-1.0000010001	6	.00000	6M20076				
2224- 6M20076		10002	6 0.95105	10003	6-0.58778						
2225- MPC	1	108	1	-1.0000010001	1	1.00000	6M20081				
2226- 6M20081		10002	1-0.58778	10003	1-0.30901						
2227- MPC	1	108	2	-1.0000010001	2	.00000	6M20082				
2228- 6M20082		10002	2 0.80901	10003	2-0.95105						
2229- MPC	1	108	3	-1.0000010001	3	1.00000	6M20083				
2230- 6M20083		10002	3-0.58778	10003	3-0.30901						
2231- MPC	1	108	4	-1.0000010001	4	.00000	6M20084				
2232- 6M20084		10002	4 0.80901	10003	4-0.95105						
2233- MPC	1	108	5	-1.0000010001	5	1.00000	6M20085				
2234- 6M20085		10002	5-0.58778	10003	5-0.30901						
2235- MPC	1	108	6	-1.0000010001	6	.00000	6M20086				
2236- 6M20086		10002	6 0.80901	10003	6-0.95105						
2237- MPC	1	109	1	-1.0000010001	1	1.00000	6M20091				
2238- 6M20091		10002	1-0.80901	10003	1 0.30901						
2239- MPC	1	109	2	-1.0000010001	2	.00000	6M20092				
2240- 6M20092		10002	2 0.58778	10003	2-0.95105						
2241- MPC	1	109	3	-1.0000010001	3	1.00000	6M20093				
2242- 6M20093		10002	3-0.80901	10003	3 0.30901						
2243- MPC	1	109	4	-1.0000010001	4	.00000	6M20094				
2244- 6M20094		10002	4 0.58778	10003	4-0.95105						
2245- MPC	1	109	5	-1.0000010001	5	1.00000	6M20095				
2246- 6M20095		10002	5-0.80901	10003	5 0.30901						
2247- MPC	1	109	6	-1.0000010001	6	.00000	6M20096				
2248- 6M20096		10002	6 0.58778	10003	6-0.95105						
2249- MPC	1	110	1	-1.0000010001	1	1.00000	6M20101				
2250- 6M20101		10002	1-0.95105	10003	1 0.80901						

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2251- MPC	1	110	2	-1.0000010001	2	.000000				6M20102	
2252- 6M20102		10002		2 0.30901	10003	2-0.58778					
2253- MPC	1	110	3	-1.0000010001	3	1.000000				6M20103	
2254- 6M20103		10002		3-0.95105	10003	3 0.80901					
2255- MPC	1	110	4	-1.0000010001	4	.000000				6M20104	
2256- 6M20104		10002		4 0.30901	10003	4-0.58778					
2257- MPC	1	110	5	-1.0000010001	5	1.000000				6M20105	
2258- 6M20105		10002		5-0.95105	10003	5 0.80901					
2259- MPC	1	110	6	-1.0000010001	6	.000000				6M20106	
2260- 6M20106		10002		6 0.30901	10003	6-0.58778					
2261- MPC	1	111	1	-1.0000010001	1	1.000000				6M20111	
2262- 6M20111		10002		1-1.00000	10003	1 1.000000					
2263- MPC	1	111	2	-1.0000010001	2	.000000				6M20112	
2264- 6M20112		10002		2 0.00000	10003	2-0.000000					
2265- MPC	1	111	3	-1.0000010001	3	1.000000				6M20113	
2266- 6M20113		10002		3-1.00000	10003	3 1.000000					
2267- MPC	1	111	4	-1.0000010001	4	.000000				6M20114	
2268- 6M20114		10002		4 0.00000	10003	4-0.000000					
2269- MPC	1	111	5	-1.0000010001	5	1.000000				6M20115	
2270- 6M20115		10002		5-1.00000	10003	5 1.000000					
2271- MPC	1	111	6	-1.0000010001	6	.000000				6M20116	
2272- 6M20116		10002		6 0.00000	10003	6-0.000000					
2273- MPC	1	112	1	-1.0000011001	1	1.000000				6M21011	
2274- 6M21011		11002		1 1.00000	11003	1 1.000000					
2275- MPC	1	112	2	-1.0000011001	2	.000000				6M21012	
2276- 6M21012		11002		2 0.00000	11003	2 0.000000					
2277- MPC	1	112	3	-1.0000011001	3	1.000000				6M21013	
2278- 6M21013		11002		3 1.00000	11003	3 1.000000					
2279- MPC	1	112	4	-1.0000011001	4	.000000				6M21014	
2280- 6M21014		11002		4 0.00000	11003	4 0.000000					
2281- MPC	1	112	5	-1.0000011001	5	1.000000				6M21015	
2282- 6M21015		11002		5 1.00000	11003	5 1.000000					
2283- MPC	1	112	6	-1.0000011001	6	.000000				6M21016	
2284- 6M21016		11002		6 0.00000	11003	6 0.000000					
2285- MPC	1	113	1	-1.0000011001	1	1.000000				6M21021	
2286- 6M21021		11002		1 0.95105	11003	1 0.80901					
2287- MPC	1	113	2	-1.0000011001	2	.000000				6M21022	
2288- 6M21022		11002		2 0.30901	11003	2 0.58778					
2289- MPC	1	113	3	-1.0000011001	3	1.000000				6M21023	
2290- 6M21023		11002		3 0.95105	11003	3 0.80901					
2291- MPC	1	113	4	-1.0000011001	4	.000000				6M21024	
2292- 6M21024		11002		4 0.30901	11003	4 0.58778					
2293- MPC	1	113	5	-1.0000011001	5	1.000000				6M21025	
2294- 6M21025		11002		5 0.95105	11003	5 0.80901					
2295- MPC	1	113	6	-1.0000011001	6	.000000				6M21026	
2296- 6M21026		11002		6 0.30901	11003	6 0.58778					
2297- MPC	1	114	1	-1.0000011001	1	1.000000				6M21031	
2298- 6M21031		11002		1 0.80901	11003	1 0.30901					
2299- MPC	1	114	2	-1.0000011001	2	.000000				6M21032	
2300- 6M21032		11002		2 0.58778	11003	2 0.95105					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2301-	MPC	1	114	3	-1.0000011001	3	1.00000			6M21033	
2302-	6M21033			11002	3 0.80901	11003	3 0.30901				
2303-	MPC	1	114	4	-1.0000011001	4	.00000			6M21034	
2304-	6M21034			11002	4 0.58778	11003	4 0.95105				
2305-	MPC	1	114	5	-1.0000011001	5	1.00000			6M21035	
2306-	6M21035			11002	5 0.80901	11003	5 0.30901				
2307-	MPC	1	114	6	-1.0000011001	6	.00000			6M21036	
2308-	6M21036			11002	6 0.58778	11003	6 0.95105				
2309-	MPC	1	115	1	-1.0000011001	1	1.00000			6M21041	
2310-	6M21041			11002	1 0.58778	11003	1-0.30901				
2311-	MPC	1	115	2	-1.0000011001	2	.00000			6M21042	
2312-	6M21042			11002	2 0.80901	11003	2 0.95105				
2313-	MPC	1	115	3	-1.0000011001	3	1.00000			6M21043	
2314-	6M21043			11002	3 0.58778	11003	3-0.30901				
2315-	MPC	1	115	4	-1.0000011001	4	.00000			6M21044	
2316-	6M21044			11002	4 0.80901	11003	4 0.95105				
2317-	MPC	1	115	5	-1.0000011001	5	1.00000			6M21045	
2318-	6M21045			11002	5 0.58778	11003	5-0.30901				
2319-	MPC	1	115	6	-1.0000011001	6	.00000			6M21046	
2320-	6M21046			11002	6 0.80901	11003	6 0.95105				
2321-	MPC	1	116	1	-1.0000011001	1	1.00000			6M21051	
2322-	6M21051			11002	1 0.30901	11003	1-0.80901				
2323-	MPC	1	116	2	-1.0000011001	2	.00000			6M21052	
2324-	6M21052			11002	2 0.95105	11003	2 0.58778				
2325-	MPC	1	116	3	-1.0000011001	3	1.00000			6M21053	
2326-	6M21053			11002	3 0.30901	11003	3-0.80901				
2327-	MPC	1	116	4	-1.0000011001	4	.00000			6M21054	
2328-	6M21054			11002	4 0.95105	11003	4 0.58778				
2329-	MPC	1	116	5	-1.0000011001	5	1.00000			6M21055	
2330-	6M21055			11002	5 0.30901	11003	5-0.80901				
2331-	MPC	1	116	6	-1.0000011001	6	.00000			6M21056	
2332-	6M21056			11002	6 0.95105	11003	6 0.58778				
2333-	MPC	1	117	1	-1.0000011001	1	1.00000			6M21061	
2334-	6M21061			11002	1 0.00000	11003	1-1.00000				
2335-	MPC	1	117	2	-1.0000011001	2	.00000			6M21062	
2336-	6M21062			11002	2 1.00000	11003	2 0.00000				
2337-	MPC	1	117	3	-1.0000011001	3	1.00000			6M21063	
2338-	6M21063			11002	3 0.00000	11003	3-1.00000				
2339-	MPC	1	117	4	-1.0000011001	4	.00000			6M21064	
2340-	6M21064			11002	4 1.00000	11003	4 0.00000				
2341-	MPC	1	117	5	-1.0000011001	5	1.00000			6M21065	
2342-	6M21065			11002	5 0.00000	11003	5-1.00000				
2343-	MPC	1	117	6	-1.0000011001	6	.00000			6M21066	
2344-	6M21066			11002	6 1.00000	11003	6 0.00000				
2345-	MPC	1	118	1	-1.0000011001	1	1.00000			6M21071	
2346-	6M21071			11002	1-0.30901	11003	1-0.80901				
2347-	MPC	1	118	2	-1.0000011001	2	.00000			6M21072	
2348-	6M21072			11002	2 0.95105	11003	2-0.58778				
2349-	MPC	1	118	3	-1.0000011001	3	1.00000			6M21073	
2350-	6M21073			11002	3-0.30901	11003	3-0.80901				

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2351- MPC	1	118	4	-1.00000	11001	4	.00000			6M21074	
2352- 6M21074		11002	4	0.95105	11003	4	-0.58778				
2353- MPC	1	118	5	-1.00000	11001	5	1.00000			6M21075	
2354- 6M21075		11002	5	-0.30901	11003	5	-0.80901				
2355- MPC	1	118	6	-1.00000	11001	6	.00000			6M21076	
2356- 6M21076		11002	6	0.95105	11003	6	-0.58778				
2357- MPC	1	119	1	-1.00000	11001	1	1.00000			6M21081	
2358- 6M21081		11002	1	-0.58778	11003	1	-0.30901				
2359- MPC	1	119	2	-1.00000	11001	2	.00000			6M21082	
2360- 6M21082		11002	2	0.80901	11003	2	-0.95105				
2361- MPC	1	119	3	-1.00000	11001	3	1.00000			6M21083	
2362- 6M21083		11002	3	-0.58778	11003	3	-0.30901				
2363- MPC	1	119	4	-1.00000	11001	4	.00000			6M21084	
2364- 6M21084		11002	4	0.80901	11003	4	-0.95105				
2365- MPC	1	119	5	-1.00000	11001	5	1.00000			6M21085	
2366- 6M21085		11002	5	-0.58778	11003	5	-0.30901				
2367- MPC	1	119	6	-1.00000	11001	6	.00000			6M21086	
2368- 6M21086		11002	6	0.80901	11003	6	-0.95105				
2369- MPC	1	120	1	-1.00000	11001	1	1.00000			6M21091	
2370- 6M21091		11002	1	-0.80901	11003	1	0.30901				
2371- MPC	1	120	2	-1.00000	11001	2	.00000			6M21092	
2372- 6M21092		11002	2	-0.58778	11003	2	-0.95105				
2373- MPC	1	120	3	-1.00000	11001	3	1.00000			6M21093	
2374- 6M21093		11002	3	-0.80901	11003	3	0.30901				
2375- MPC	1	120	4	-1.00000	11001	4	.00000			6M21094	
2376- 6M21094		11002	4	-0.58778	11003	4	-0.95105				
2377- MPC	1	120	5	-1.00000	11001	5	1.00000			6M21095	
2378- 6M21095		11002	5	-0.80901	11003	5	0.30901				
2379- MPC	1	120	6	-1.00000	11001	6	.00000			6M21096	
2380- 6M21096		11002	6	-0.58778	11003	6	-0.95105				
2381- MPC	1	121	1	-1.00000	11001	1	1.00000			6M21101	
2382- 6M21101		11002	1	-0.95105	11003	1	0.80901				
2383- MPC	1	121	2	-1.00000	11001	2	.00000			6M21102	
2384- 6M21102		11002	2	0.30901	11003	2	-0.58778				
2385- MPC	1	121	3	-1.00000	11001	3	1.00000			6M21103	
2386- 6M21103		11002	3	-0.95105	11003	3	0.80901				
2387- MPC	1	121	4	-1.00000	11001	4	.00000			6M21104	
2388- 6M21104		11002	4	0.30901	11003	4	-0.58778				
2389- MPC	1	121	5	-1.00000	11001	5	1.00000			6M21105	
2390- 6M21105		11002	5	-0.95105	11003	5	0.80901				
2391- MPC	1	121	6	-1.00000	11001	6	.00000			6M21106	
2392- 6M21106		11002	6	0.30901	11003	6	-0.58778				
2393- MPC	1	122	1	-1.00000	11001	1	1.00000			6M21111	
2394- 6M21111		11002	1	-1.00000	11003	1	1.00000				
2395- MPC	1	122	2	-1.00000	11001	2	.00000			6M21112	
2396- 6M21112		11002	2	0.00000	11003	2	-0.00000				
2397- MPC	1	122	3	-1.00000	11001	3	1.00000			6M21113	
2398- 6M21113		11002	3	-1.00000	11003	3	1.00000				
2399- MPC	1	122	4	-1.00000	11001	4	.00000			6M21114	
2400- 6M21114		11002	4	0.00000	11003	4	-0.00000				



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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2401- NPC	1		122	5		-1.00000	11001	5	1.00000		CM21115
2402- CM21115				11002		5-1.00000	11003		5 1.00000		
2403- NPC	1		122	6		-1.00000	11001	6	.00000		CM21116
2404- CM21116				11002		6 0.00000	11003		6-0.00000		
2405- OMIT1	26		11002	11003							
2406- OMIT1	35		1001								
2407- OMIT1	35		2001	3001	4001	5001	6001	7001	8001		
2408- OMIT1	35		9001	10001							
2409- OMIT1	345		1002	1003							
2410- OMIT1	23456		2002	2003	3002	3003	4002	4003			
2411- OMIT1	23456		5002	5003	6002	6003	7002	7003			
2412- OMIT1	23456		8002	8003	9002	9003	10002	10003			
2413- PQUAD2	1		1	.01	.0						
2414- SPC1	1		1	1001							
2415- SPC1	1		35	11001							
2416- SPC1	1		126	1002	1003						
2417- SPC1	1		246	1001	2001	3001	4001	5001	6001		
2418- SPC1	1		246	7001	8001	9001	10001	11001			
2419- SPC1	1		345	11002	11003						

ENDDATA

APRIL 11. 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C C M P I L A T I O N  
D M A P - D M A P I N S T R U C T I O N  
N O .

```
1 BEGIN      NO.3 NORMAL MODES ANALYSIS - SERIES M $
2 FILE       LLL=TAPE $
3 GP1        GEOM1,GEOM2,/GPL,EQEXIN,GPDT,CSTM,BGPDT,SIL/V,N,LUSET/ C,N.
             123/V,N,NOGPDT $
4 SAVE       LUSET $
5 CHKPNP     GPL,EQEXIN,GPDT,CSTM,BGPDT,SIL $
6 GP2        GEOM2,EQEXIN/ECT $
7 CHKPNP     ECT $
8 PLTSET     PCDB,EQEXIN,ECT/PLTSETX,PLTPAR,GPSETS,ELSETS/V,N,NSIL/ V,N.
             JUMPPLOT $
9 SAVE       NSIL,JUMPPLOT $
10 PRMSG     PLTSETX// $
11 SETVAL    //V,N,PLTFLG/C,N,1/V,N,PFILE/C,N,0 $
12 SAVE      PLTFLG,PFILE $
13 COND      P1,JUMPPLOT $
14 PLJT      PLTPAR,GPSETS,ELSETS,CASECC,BGPDT,EQEXIN,SIL,,/PLOTX1/ V,N.
             NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $
15 SAVE      JUMPPLOT,PLTFLG,PFILE $
16 PRMSG     PLOTX1// $
17 LABEL     P1 $
18 CHKPNP    PLTPAR,GPSETS,ELSETS $
19 GP3       GEOM3,EQEXIN,GEOM2/,GPTT/C,N,123/V,N,NOGRAV/C,N,123 $
20 CHKPNP    GPTT $
21 TAIL      ,ECT,EPT,BGPDT,SIL,GPTT,CSTM/EST,,GEI,ECFT,GPCT/V,N,LUSET/ C,N.
             123/V,N,NOSIMP/C,N,0/V,N,NOGENL/V,N,GENEL $
22 SAVE      NOGENL,NOSIMP,GENEL $
```

APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C C M P I L A T I O N  
D M A P - D M A P I N S T R U C T I O N  
N O .

```
23 COND      ERROR1,NOSIMP $
24 PURGE      OGPST/GENEL $
25 CHKPNT     EST,ECPT,GPCT,GEI,OGPST $
26 SMA1       CSTM,MPT,ECPT,GPCT,DIT/KGGX,,GPST/V,N,NOGENL/V,N,NOK4GC $
27 CHKPNT     KGGX,GPST $
28 SMA2       CSTM,MPT,ECPT,GPCT,DIT/MGG,/V,Y,WTMASS=1.0/V,N,NOMGG/V,N,NOBGG/
V,Y,COUPMASS/V,Y,CPBAR/V,Y,CPROD/V,Y,CPQUAD1/V,Y,CPQUAD2/ V,
Y,CPTRIA1/V,Y,CPTRIA2/V,Y,CPTUBE/V,Y,CPGOPLT/V,Y,CPTRPLT/ V,Y,
CPTRBSC $
29 SAVE       NOMGG $
30 COND       ERROR1,NCMGG $
31 CHKPNT     MGG $
32 COND       LGPWG,GRDPNT $
33 GPWG       BGPDT,CSTM,EQEXIN,MGG/OGPWG/V,Y,GRDFNT=-1/V,Y,WTMASS $
34 QFP        OGPWG,,,,,//V,N,CARDNO $
35 SAVE       CARDNO $
36 LABEL      LGPWG $
37 EQUIV      KGGX,KGG/NOGENL $
38 CHKPNT     KGG $
39 COND       LBL11,NOGENL $
40 SMA3       GEI,KGGX/KGG/V,N,LUSET/V,N,NOGENL/V,N,NOSIMP $
41 CHKPNT     KGG $
42 LABEL      LBL11 $
43 PARAM      //C,N,MPY/V,N,NSKIP/C,N,0/C,N,0 $
44 GP4        CASECC,GEOM4,EQEXIN,SIL,GPDT/RG,,USET,/V,N,LUSET/V,N,MPCF1/ V,
N,MPCF2/V,N,SINGLE/V,N,OMIT/V,N,REACT/V,N,NSKIP/V,N,REPEAT/
V,N,NOSET1/V,N,NCL/V,N,NOA $
45 SAVE       MPCF1,MPCF2,SINGLE,OMIT,REACT,NSKIP,REPEAT,NOSET,NCL,NOA $
```

APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
46 COND      ERROR3,NOL $
47 PURGE      KRR,KLR,DM,MLR,MR/REACT/GM/MPCF1/GO/OMIT/KFS/S INGLE/QG/NOSET $
48 EQUIV      KGG,KNN/MPCF1/MGG,MNN/MPCF1 $
49 CHKPNT     KRR,KLR,DM,MLR,MR,GM,RG,GO,KFS,CG,USET,KAN,MNN $
50 COND      LBL4,GENEL $
51 GPSP       GPL,GPST,LSET,SIL/OGPST $
52 QFP        JGPST,,,,,/V,N,CARDNO $
53 SAVE       CARDNO $
54 LABEL      LBL4 $
55 COND      LBL2,MPCF2 $
56 MCE1       USET,RG/GM $
57 CHKPNT     GM $
58 MCE2       USET,GM,KGG,MGG,,/KNN,MNN,, $
59 CHKPNT     KNN,MNN $
60 LABEL      LBL2 $
61 EQUIV      KNN,KFF/SINGLE/MNN,MFF/SINGLE $
62 CHKPNT     KFF,MFF $
63 COVD       LBL3,SINGLE $
64 SCE1       USET,KNN,MNN,,/KFF,KFS,,MFF,, $
65 CHKPNT     KFS,KFF,MFF $
66 LABEL      LBL3 $
67 EQUIV      KFF,KAA/OMIT/ MFF,MAA/CMIT $
68 CHKPNT     KAA,MAA $
69 COND      LBL5,OMIT $
70 SMP1       USET,KFF,,,/GO,KAA,KOO,LOC,UOO,,,,, $
```

APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
71  CHKPNT    GO,KAA $
72  SMP2      USET,GO,MFF/MAA $
73  CHKPNT    MAA $
74  LABEL     LBL5 $
74  ADD MAA,MFLD/MAH $
74  PARAM //C,N,NOP/V,N,TRUE=-1 $
74  EQUIV MAH,MAA/TRUE $
74  COND MAHND9,TRUE $
74  MATPRN MAH,...// $
74  LABEL MAHND9 $
75  COND     LBL6,REACT $
76  RBMG1     USET,KAA,MAA/KLL,KLR,KRR,MLL,MLR,MRR $
77  CHKPNT    KLL,KLR,KRR,MLL,MLR,MRR $
78  RBMG2     KLL/LLL,ULL $
79  CHKPNT    ULL,LLL $
80  RBMG3     LLL,ULL,KLR,KRR/DM $
81  CHKPNT    DM $
82  RBMG4     DM,MLL,MLR,MRR/MR $
83  CHKPNT    MR $
84  LABEL     LBL6 $
85  DPD       DYNAMICS,GPL,SIL,USET/GPLD,SILD,USETD,,,,,EED,EQDYN/V,N,
      _USET/V,N,LLUSETD/V,N,NOTFL/V,N,NOCLT/V,N,NOPSDL/V,N,NOFRL/ V,
      N,NJNFLT/V,N,NOTRL/V,N,NOEED/C,N,123/V,N,NOUE $
86  SAVE      NOEED $
87  COND      ERROR2,NOEED $
88  CHKPNT    EED $
```

APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C C M P I L A T I O N  
DNAP-DNAP INSTRUCTION  
NO.

```
88 SEEMAT MGG,KGG,,,//C,N,PRINT
89 READ      KAA,MAA,MR,DM,EED,USET,CASECC/LAMA,PHIA,MI,OEIGS/C,N,MODES/V,N,
      NEIGV $
90 SAVE      NEIGV $
91 CHKPNT    LAMA,PHIA,MI,OEIGS $
91 MATGPR GPL,USET,SIL,PHIA//C,N,A
92 OFP      LAMA,OEIGS,,,//V,N,CARDNO $
93 SAVE      CARDNO $
94 COND      FINIS,NEIGV $
95 SDR1      USET,,PHIA,,GO,GM,,KFS,,/PHIG,,QG/C,N,1/C,N,REIG $
96 CHKPNT    PHIG,QG $
97 PARAM     //C,N,SLB/V,N,SCALAR/V,N,SIL/V,N,LUSET $
98 EQUIV     SIL,SIP/SCALAR/BGPD,BGPD/SCALAR $
99 CHKPNT    SIP,BGPD $
100 COND     LBL7,SCALAR $
101 PLTTRAN   BGPD,SIL/BGPD,SIP/V,N,LUSET/V,N,LUSEP $
102 SAVE     LUSEP $
103 CHKPNT    BGPD,SIP $
104 LABEL     LBL7 $
105 SDR2      CASECC,CSTM,MPT,DIT,EQEXIN,SIL,,,BGPD,LAMA,QG,PHIG,EST,,/OQG1,
      OPHIG,OE1,OE1,PPHIG/C,N,REIG $
106 OFP      OPHIG,OQG1,OE1,OE1,,,//V,N,CARDNO $
107 SAVE     CARDNO $
107 SMPYAD PHIA,KAA,PHIA,,,/KH/C,N,3/C,N,1/C,N,1/C,N,2/C,N,1 $
107 SOLVE MI,KH/WH/C,N,1 $
107 SMPYAD PDU2,PHIA,WH,,,/PD2/C,N,3 $
```

APRIL 11, 1974 NASTRAN 5/13/72

AXISYMMETRIC CIRC. CYL. WITH FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
107 MPYAD TU12,PHIA, /PHF/C,N,0 $
107 MATPRN WH,PD2,PHF,.,// $
108 COND      P2,JUMPPLOT $
109 PLJT      PLTPAR,GPSETS,ELSETS,CASECC,BGPD,EGEXIN,SIP,.,PPHIG / PLOTX2/
      V,N,NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $
110 SAVE      PFILE $
111 PRTMSG     PLOTX2// $
112 LABEL     P2 $
113 JUMP       FINIS $
114 LABEL     ERROR1 $
115 PRTPARM    //C,N,-1/C,N,MODES $
116 LABEL     ERROR2 $
117 PRTPARM    //C,N,-2/C,N,MODES $
118 LABEL     ERROR3 $
119 PRTPARM    //C,N,-3/C,N,MODES $
120 LABEL     FINIS $
121 END        $
```

\*\*NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM\*\*

**Appendix C4**  
**1/8-SCALE EXTERNAL TANK CALCULATION OF**  
**FLUID MASS MATRIX AND PRESSURE RECOVERY**  
**MATRIX – POST MAX Q FILL CONDITION**  
**( $h_{LOX} = 5''$ ,  $h_{LH_2} = 130''$ )  $n = 0, 1, 2, 3$**



JULY 3, 1974 NASTRAN 2/ 1/73

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

```
ID HYDRD,COPPOLINO
APP DISP
SOL 7.0
TIME 15
CHKPNT YES
DIAG 7,8,13,14,19,21,22
ALTER 50
MATGPR GPL,USET,SIL,MGG//C,N,G
MATGPR GPL,USET,SIL,KGG//C,N,G
ALTER 73
MATGPR GPL,USET,SIL,MFF//C,N,F
MATGPR GPL,USET,SIL,KFF//C,N,F
ALTER 101
MATGPR GPL,USET,SIL,ABFL//C,N,P
MATGPR GPL,JSET,SIL,KBFL//C,N,P
ALTER 122
ADD ABFL,M2DPP/M2PP/V,N,MFACT $
ALTER 123,124
ALTER 136
MATGPR GPLD,USED,SILD,MDD//C,N,D
MATGPR GPLD,USED,SILD,KDD//C,N,D
SEEMAT MGG,<GG,MFF,KFF,ABFL//C,N,PRINT
SEEMAT <BFL,MDD,KDD,.,//C,N,PRINT
PARTN <DD,P9,/<BP,AEM,.,KE/C,N,-1 $
TRVSP AEM/AEMT $
SOLVE <BP,AEMT/PDU2/C,N,1/C,N,-1 $
ADD PDU2,/PDU3/C,Y,AS95=(1.0,0.0) $
PARAM //C,N,NOP/V,N,TRUE=-1 $
EQUJIV PDU3,PDU2/TRUE $
CUND PDUN09,TRUE $
MATPRV PDU3,.,.,// $
LABEL PDUN09 $
MPYAD AEM,PDU2,/MFLD/C,N,0/C,N,-1 $
JJTPUT3 MFLD,PDU2,.,.,//C,N,0/C,Y,N1=AMF/C,Y,N2=APD $
MATPRV PDU2,MFLD,AEM,.,// $
LABEL EXROR3 $
ALTER 137,170
EXIT
ENDALTER
CEND
```

JULY 3. 1974 NASTRAN 2/ 1/73

N A S T R A N   E X E C U T I V E   C O N T R O L   D E C K   E C H O

ECHO OF FIRST CARD IN CHECKPOINT DICTIONARY TO BE PUNCHED OUT FOR THIS PROBLEM

RESTART   HYDRJ   ,CJPPOLIN, 7/ 3/74.   8970 ,

CYLINDRICAL FLUID

JULY 3. 1974 NASTRAN 2/ 1/73

C A S E   C O N T R O L   D E C K   E C H O	
CARD	
COUNT	
1	TITLE=CYLINDRICAL FLUID
2	AXISYM=FLUID
3	SPC=1
4	MPC=1
5	CMETHOD=1
6	OUTPUT
7	DISP=ALL
8	HARMONICS=ALL
9	BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

S O R T E D   B U L K   D A T A   E C H O

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1- AXIF	5100	0.0	9.39-5			NO					6AX
2- 6AX	0	1	2	3							
3- BDYLIST		1012	1025	1038	1051	1064	1077	1090	6801		
4- 6B01	1103	1116	1129	1142	1154	1166	1179	1178	6802		
5- 6B02	AXIS										
6- BDYLIST		2181	2201	2221	2241	2261	2281	2302	6803		
7- 6B03	2321	2344	2381	2401	2420	2439	AXIS				
8- CFLUID2	5209	1009	1022								
9- CFLUID2	5222	1022	1035								
10- CFLUID2	5235	1035	1048								
11- CFLUID2	5248	1048	1061								
12- CFLUID2	5261	1061	1074								
13- CFLUID2	5274	1074	1087								
14- CFLUID2	5287	1087	1100								
15- CFLUID2	5300	1100	1113								
16- CFLUID2	5313	1113	1126								
17- CFLUID2	5326	1126	1139								
18- CFLUID2	5339	1139	1152								
19- CFLUID2	5352	1152	1165								
20- CFLUID2	5367	1165	1178								
21- CFLUID2	8801	2179	2199			6.54-6					
22- CFLUID2	8811	2199	2219			6.54-6					
23- CFLUID2	8821	2219	2239			6.54-6					
24- CFLUID2	8831	2239	2259			6.54-6					
25- CFLUID2	8841	2259	2279			6.54-6					
26- CFLUID2	8851	2279	2300			6.54-6					
27- CFLUID2	8861	2300	2319			6.54-6					
28- CFLUID2	8871	2319	2342			6.54-6					
29- CFLUID2	8881	2342	2379			6.54-6					
30- CFLUID2	8891	2379	2399			6.54-6					
31- CFLUID2	8901	2399	2419			6.54-6					
32- CFLUID2	8911	2419	2439			6.54-6					
33- CFLUID3	5342	1142	1141	1154							
34- CFLUID3	5354	1154	1153	1166							
35- CFLUID3	5365	1165	1178	1179							
36- CFLUID3	5366	1166	1165	1179							
37- CFLUID3	8903	2401	2400	2420		6.54-6					
38- CFLUID3	8912	2420	2419	2439		6.54-6					
39- CFLUID4	5210	1010	1009	1022	1023						
40- CFLUID4	5211	1011	1010	1023	1024						
41- CFLUID4	5212	1012	1011	1024	1025						
42- CFLUID4	5223	1023	1022	1035	1036						
43- CFLUID4	5224	1024	1023	1036	1037						
44- CFLUID4	5225	1025	1024	1037	1038						
45- CFLUID4	5236	1036	1035	1048	1049						
46- CFLUID4	5237	1037	1036	1049	1050						
47- CFLUID4	5238	1038	1037	1050	1051						
48- CFLUID4	5249	1049	1048	1051	1062						
49- CFLUID4	5250	1050	1049	1062	1063						
50- CFLUID4	5251	1051	1050	1063	1064						

## SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
51- CFLUID4	5262	1064	1063	1076	1077					
52- CFLUID4	5263	1063	1062	1075	1076					
53- CFLUID4	5264	1062	1061	1074	1075					
54- CFLUID4	5275	1087	1088	1101	1100					
55- CFLUID4	5276	1088	1089	1102	1101					
56- CFLUID4	5277	1089	1090	1103	1102					
57- CFLUID4	5288	1103	1102	1115	1116					
58- CFLUID4	5289	1102	1101	1114	1115					
59- CFLUID4	5290	1101	1100	1113	1114					
60- CFLUID4	5301	1113	1114	1127	1126					
61- CFLUID4	5302	1114	1115	1128	1127					
62- CFLUID4	5303	1115	1116	1129	1128					
63- CFLUID4	5314	1129	1128	1141	1142					
64- CFLUID4	5315	1128	1127	1140	1141					
65- CFLUID4	5316	1127	1126	1139	1140					
66- CFLUID4	5327	1075	1074	1087	1088					
67- CFLUID4	5328	1076	1075	1088	1089					
68- CFLUID4	5329	1077	1076	1090	1089					
69- CFLUID4	5340	1140	1139	1152	1153					
70- CFLUID4	5341	1141	1140	1153	1154					
71- CFLUID4	5353	1153	1152	1165	1166					
72- CFLUID4	8802	2179	2180	2200	2199	6.54-6				
73- CFLUID4	8803	2180	2181	2201	2200	6.54-6				
74- CFLUID4	8812	2199	2200	2220	2219	6.54-6				
75- CFLUID4	8813	2200	2201	2221	2220	6.54-6				
76- CFLUID4	8822	2219	2220	2240	2239	6.54-6				
77- CFLUID4	8823	2220	2221	2241	2240	6.54-6				
78- CFLUID4	8832	2239	2240	2260	2259	6.54-6				
79- CFLUID4	8833	2240	2241	2261	2260	6.54-6				
80- CFLUID4	8842	2259	2260	2280	2279	6.54-6				
81- CFLUID4	8843	2260	2261	2281	2280	6.54-6				
82- CFLUID4	8852	2279	2280	2301	2300	6.54-6				
83- CFLUID4	8853	2280	2281	2322	2321	6.54-6				
84- CFLUID4	8862	2300	2301	2320	2319	6.54-6				
85- CFLUID4	8863	2301	2302	2321	2320	6.54-6				
86- CFLUID4	8872	2319	2320	2343	2342	6.54-6				
87- CFLUID4	8873	2320	2321	2344	2343	6.54-6				
88- CFLUID4	8882	2342	2343	2380	2379	6.54-6				
89- CFLUID4	8883	2343	2344	2381	2380	6.54-6				
90- CFLUID4	8892	2379	2380	2400	2399	6.54-6				
91- CFLUID4	8893	2380	2381	2401	2400	6.54-6				
92- CFLUID4	8902	2399	2400	2420	2419	6.54-6				
93- CORD2C	69	0	-81.5683.0		35.5985	66.9096	.0		26.5170	EC69
94- E69	68.25	0.0	48.432							
95- CORD2C	100	696	74.738	-30.494	6.138	200.0	-30.494	6.138	ECSSRM	
96- ECSSRM	74.738	0.0	0.0							
97- CORD2C	5001	0	-81.5683.0		35.5985	66.9096	.0		26.5170	ECO
98- ECO	68.25	0.0	48.432							
99- CORD2C	5100	0	-81.5683.0		35.5985	66.9096	.0		26.5170	EC5100
100- EC5100	68.25	0.0	48.432							

## SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
101-CORD2R	101	696	74.738	-30.494	6.138	74.738	-28.570	115.6963	ERSSRM	
102-ERSSRM	200.	-30.494	6.138							
103-CORD2R	696	0	-81.5683.0		35.5985	-80.2278.0		57.5136	6696	
104-6696	68.25	0.0	48.432							
105-CORD2R	3001	0	-81.5683.0		35.5985	-80.2278.0		57.5136	EC3001	
106-EC3001	68.25	0.0	48.432							
107-CORD2R	3002	696	245.7536	-16.4631	11.0003	245.7536	-13.75	24.9514	EC3002	
108-EC3002	300.	-16.4631	11.0003							
109-CORD2R	10000	0	-81.5683.0		35.5985	66.9096	0.0	26.5170	EC10000	
110-EC10000	68.25	0.0	48.432							
111-CORD2S	10002	10000	0.0	0.0	32.14	0.0	0.0	33.14	EC10002	
112-EC10002	1.	0.	33.14							
113-CORD2S	10003	10000	0.0	0.0	37.65	0.0	0.0	38.65	EC10003	
114-EC10003	1.	0.	38.65							
115-CORD2S	10004	10000	0.0	0.0	44.12	0.0	0.0	45.12	EC10004	
116-EC10004	1.	0.	45.12							
117-CORD2S	10005	10000	0.0	0.0	52.52	0.0	0.0	53.52	EC10005	
118-EC10005	1.	0.	53.52							
119-CORD2S	10006	10000	0.0	0.0	58.68	0.0	0.0	59.68	EC10006	
120-EC10006	1.	0.	59.68							
121-CORD2S	10010	10000	0.0	0.0	81.19	0.0	0.0	82.19	EC10010	
122-EC10010	1.	0.	82.19							
123-CORD2S	10011	10000	0.0	0.0	79.13	0.0	0.0	80.13	EC10011	
124-EC10011	1.	0.	80.13							
125-CORD2S	10012	10000	0.0	0.0	76.08	0.0	0.0	77.08	EC10012	
126-EC10012	1.	0.	77.08							
127-CORD2S	10013	10000	0.0	0.0	76.87	0.0	0.0	77.87	EC10013	
128-EC10013	1.	0.	77.87							
129-CORD2S	10014	10000	0.0	0.0	73.78	0.0	0.0	74.78	EC10014	
130-EC10014	1.	0.	74.78							
131-CORD2S	10015	10000	0.0	0.0	77.08	0.0	0.0	78.08	EC10015	
132-EC10015	1.	0.	78.08							
133-CORD2S	10016	10000	0.0	0.0	83.94	0.0	0.0	84.94	EC10016	
134-EC10016	1.	0.	84.94							
135-CORD2S	20014	10000	0.0	0.0	255.71	0.0	0.0	256.71	EC20014	
136-EC20014	1.	0.	256.71							
137-CORD2S	20015	10000	0.0	0.0	244.69	0.0	0.0	245.69	EC20015	
138-EC20015	1.	0.	245.69							
139-CORD2S	20016	10000	0.0	0.0	248.21	0.0	0.0	249.21	EC20016	
140-EC20016	1.	0.	249.21							
141-CORD2S	20017	10000	0.0	0.0	248.52	0.0	0.0	249.52	EC20017	
142-EC20017	1.	0.	249.52							
143-DWI	P9	0	2	1	2		216	1		
144-DWI	P9	1	89	1.	1.	1.	1.	1.		EPUE 01
145-EPUE 01	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 02
146-EPUE 02	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 03
147-EPUE 03	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 04
148-EPUE 04	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 05
149-EPUE 05	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 06
150-EPUE 06	1.	1.	1.	1.	1.	1.	1.	1.		EPUE 07

## SORTED BULK DATA ECHO

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CARD
COUNT.  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  .. 10  .
151- EPUE07  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE08
152- EPUE08  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE09
153- EPUE09  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE10
154- EPUE10  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE11
155- EPUE11  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE12
156- EPUE12  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE13
157- EPUE13  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE14
158- EPUE14  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE15
159- EPUE15  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  1.  EPUE16
160- EPUE16  1.  1.  1.
161- EIGC  1  DET  MAX
162- EEI  0.  0.  0.  500.  .001  10  10
163- FLSYM  2  S  S
164- GRID  5001  3001  19.96  .0  .0  3001
165- GRID  5126  696  83.78  -19.41073.9071  10010
166- GRID  5204  5001  .0  .0  97.98  3001
167- GRID  8001  696  101.86  .0  .0  696
168- GRID  8010  69  6.40  .0  102.55  69
169- GRID  8011  69  6.40  22.5  102.55  69
170- GRID  8012  69  6.40  45.0  102.55  69
171- GRID  8013  69  6.40  67.5  102.55  69
172- GRID  8014  69  6.40  90.0  102.55  69
173- GRID  8015  69  6.40  112.5  102.55  69
174- GRID  8016  69  6.40  135.0  102.55  69
175- GRID  8017  69  6.40  157.5  102.55  69
176- GRID  8018  69  6.40  180.0  102.55  69
177- GRID  8030  69  12.61  .0  105.32  69
178- GRID  8031  69  12.61  22.5  105.32  69
179- GRID  8032  69  12.61  45.0  105.32  69
180- GRID  8033  69  12.61  67.5  105.32  69
181- GRID  8034  69  12.61  90.0  105.32  69
182- GRID  8035  69  12.61  112.5  105.32  69
183- GRID  8036  69  12.61  135.0  105.32  69
184- GRID  8037  69  12.61  157.5  105.32  69
185- GRID  8038  69  12.61  180.0  105.32  69
186- GRID  8050  69  17.91  .0  110.38  69
187- GRID  8051  69  17.91  22.5  110.38  69
188- GRID  8052  69  17.91  45.0  110.38  69
189- GRID  8053  69  17.91  67.5  110.38  69
190- GRID  8054  69  17.91  90.0  110.38  69
191- GRID  8055  69  17.91  112.5  110.38  69
192- GRID  8056  69  17.91  135.0  110.38  69
193- GRID  8057  69  17.91  157.5  110.38  69
194- GRID  8058  69  17.91  180.0  110.38  69
195- GRID  8070  69  19.80  .0  113.70  69
196- GRID  8071  69  19.80  22.5  113.70  69
197- GRID  8072  69  19.80  45.0  113.70  69
198- GRID  8073  69  19.80  67.5  113.70  69
199- GRID  8074  696  113.70  -19.41073.9071  69
200- GRID  8075  69  19.80  90.0  113.70  69

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## S O R T E D B U L K D A T A E C H O

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
201- GRID	8076	69				19.80	112.5	113.70	69											
202- GRID	8077	69				19.80	135.0	113.70	69											
203- GRID	8078	69				19.80	157.5	113.70	69											
204- GRID	8079	69				19.80	180.0	113.70	69											
205- GRID	8110	69				19.80	.0	91.98	69											
206- GRID	8111	69				19.80	22.5	91.98	69											
207- GRID	8112	69				19.80	45.0	91.98	69											
208- GRID	8113	69				19.80	67.5	91.98	69											
209- GRID	8114	696				91.98	-19.41073	9071	69											
210- GRID	8115	69				19.80	90.0	91.98	69											
211- GRID	8116	69				19.80	112.5	91.98	69											
212- GRID	8117	69				19.80	135.0	91.98	69											
213- GRID	8118	69				19.80	157.5	91.98	69											
214- GRID	8119	69				19.80	180.0	91.98	69											
215- GRID	8130	69				19.80	.0	99.98	69											
216- GRID	8131	69				19.80	22.5	99.98	69											
217- GRID	8132	69				19.80	45.0	99.98	69											
218- GRID	8133	69				19.80	67.5	99.98	69											
219- GRID	8134	696				99.98	-19.41073	9071	100											
220- GRID	8135	69				19.80	90.0	99.98	69											
221- GRID	8136	69				19.80	112.5	99.98	69											
222- GRID	8137	69				19.80	135.0	99.98	69											
223- GRID	8138	69				19.80	157.5	99.98	69											
224- GRID	8139	69				19.80	180.0	99.98	69											
225- GRID	8140	696				99.98	.0	3.9071	696						456					
226- GRID	8150	69				19.80	.0	106.86	69											
227- GRID	8151	69				19.80	22.5	106.86	69											
228- GRID	8152	69				19.80	45.0	106.86	69											
229- GRID	8153	69				19.80	67.5	106.86	69											
230- GRID	8154	696				106.86	-19.41073	9071	69											
231- GRID	8155	69				19.80	90.0	106.86	69											
232- GRID	8156	69				19.80	112.5	106.86	69											
233- GRID	8157	69				19.80	135.0	106.86	69											
234- GRID	8158	69				19.80	157.5	106.86	69											
235- GRID	8159	69				19.80	180.0	106.86	69											
236- GRID	8209	696				148.756	.0	21.9561	696						1456					
237- GRID	8299	696				229.156	.0	.0	696						456					
238- GRID	8328	696				245.7536	.0	24.9514	696						456					
239- GRID	8329	696				245.7536	-13.75	24.9514	3002						12456					
240- GRID	8331	69				19.80	11.25	245.7536	69											
241- GRID	8334	69				19.80	56.25	245.7536	69											
242- GRID	8341	696				245.7536	.0	.0	696						456					
243- GRID	8350	69				19.80	.0	270.988	69											
244- GRID	8351	69				19.80	22.5	270.988	69											
245- GRID	8352	696				270.988	-14.9702	12.9588	101											
246- GRID	8353	69				19.80	67.5	270.988	69											
247- GRID	8354	69				19.80	90.0	270.988	69											
248- GRID	8355	696				270.988	-18.8181	-6.1577	101											
249- GRID	8356	69				19.80	135.0	270.988	69											
250- GRID	8357	69				19.80	157.5	270.988	69											



## SORTED BULK DATA ECHO

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
251- GRID	8358	69			19.80	180.0	270.988	69												
252- GRID	8359	696			270.938	.0	12.9588	696							456					
253- GRID	8360	696			270.988	.0	-6.1577	696							456					
254- GRID	8440	696			269.44	.0	.0	696												
255- GRID	100200	5100			9.		23.	10002												
256- GRID	100201	5100			9.		23.	10002												
257- GRID	100202	5100			9.		23.	10002												
258- GRID	100203	5100			9.		23.	10002												
259- GRID	100300	5100			14.2		31.93	10003												
260- GRID	100301	5100			14.2		31.93	10003												
261- GRID	100302	5100			14.2		31.93	10003												
262- GRID	100303	5100			14.2		31.93	10003												
263- GRID	100400	5100			16.2		40.38	10004												
264- GRID	100401	5100			16.2		40.38	10004												
265- GRID	100402	5100			16.2		40.38	10004												
266- GRID	100403	5100			16.2		40.38	10004												
267- GRID	100500	5100			18.0		48.38	10005												
268- GRID	100501	5100			18.0		48.38	10005												
269- GRID	100502	5100			18.0		48.38	10005												
270- GRID	100503	5100			18.0		48.38	10005												
271- GRID	100600	5100			19.875		56.38	10006												
272- GRID	100601	5100			19.875		56.38	10006												
273- GRID	100602	5100			19.875		56.38	10006												
274- GRID	100603	5100			19.875		56.38	10006												
275- GRID	100700	5100			19.875		65.78	5100												
276- GRID	100701	5100			19.875		65.78	5100												
277- GRID	100702	5100			19.875		65.78	5100												
278- GRID	100703	5100			19.875		65.78	5100												
279- GRID	100800	5100			19.875		71.78	5100												
280- GRID	100801	5100			19.875		71.78	5100												
281- GRID	100802	5100			19.875		71.78	5100												
282- GRID	100803	5100			19.875		71.78	5100												
283- GRID	100900	5100			19.875		77.78	5100												
284- GRID	100901	5100			19.875		77.78	5100												
285- GRID	100902	5100			19.875		77.78	5100												
286- GRID	100903	5100			19.875		77.78	5100												
287- GRID	101000	5100			19.875		83.78	10010												
288- GRID	101001	5100			19.875		83.78	10010												
289- GRID	101002	5100			19.875		83.78	10010												
290- GRID	101003	5100			19.875		83.78	10010												
291- GRID	101100	5100			18.54		87.93	10011												
292- GRID	101101	5100			18.54		87.93	10011												
293- GRID	101102	5100			18.54		87.93	10011												
294- GRID	101103	5100			18.54		87.93	10011												
295- GRID	101200	5100			16.28		91.28	10012												
296- GRID	101201	5100			16.28		91.28	10012												
297- GRID	101202	5100			16.28		91.28	10012												
298- GRID	101203	5100			16.28		91.28	10012												
299- GRID	101300	5100			12.29		94.53	10013												
300- GRID	101301	5100			12.29		94.53	10013												

S O R T E D   B L K   D A T A   E C H O

CARD	1	2	3	4	5	6	7	8	9	10
301- GRID	101302	5100	12.29			94.53	10013			
302- GRID	101303	5100	12.29			94.53	10013			
303- GRID	101400	5100	9.274			96.083	10014			
304- GRID	101401	5100	9.274			96.083	10014			
305- GRID	101402	5100	9.274			96.083	10014			
306- GRID	101403	5100	9.274			96.083	10014			
307- GRID	101500	5100	5.266			97.386	10015			
308- GRID	101501	5100	5.266			97.386	10015			
309- GRID	101502	5100	5.266			97.386	10015			
310- GRID	101503	5100	5.266			97.386	10015			
311- GRID	101600	5100	1.7875			97.912	10016			
312- GRID	101601	5100	1.7875			97.912	10016			
313- GRID	101602	5100	1.7875			97.912	10016			
314- GRID	101603	5100	1.7875			97.912	10016			
315- GRID	110100	69	19.8			91.98	69			
316- GRID	110101	69	19.8			91.98	69			
317- GRID	110102	69	19.8			91.98	69			
318- GRID	110103	69	19.8			91.98	69			
319- GRID	110200	69	19.8			99.98	69			
320- GRID	110201	69	19.8			99.98	69			
321- GRID	110202	69	19.8			99.98	69			
322- GRID	110203	69	19.8			99.98	69			
323- GRID	110300	69	19.8			106.86	69			
324- GRID	110301	69	19.8			106.86	69			
325- GRID	110302	69	19.8			106.86	69			
326- GRID	110303	69	19.8			106.86	69			
327- GRID	110400	69	19.8			113.70	69			
328- GRID	110401	69	19.8			113.70	69			
329- GRID	110402	69	19.8			113.70	69			
330- GRID	110403	69	19.8			113.70	69			
331- GRID	110500	69	19.8			128.75	69			
332- GRID	110501	69	19.8			128.75	69			
333- GRID	110502	69	19.8			128.75	69			
334- GRID	110503	69	19.8			128.75	69			
335- GRID	110600	69	19.8			139.06	69			
336- GRID	110601	69	19.8			139.06	69			
337- GRID	110602	69	19.8			139.06	69			
338- GRID	110603	69	19.8			139.06	69			
339- GRID	110700	69	19.8			148.756	69			
340- GRID	110701	69	19.8			148.756	69			
341- GRID	110702	69	19.8			148.756	69			
342- GRID	110703	69	19.8			148.756	69			
343- GRID	110800	69	19.8			168.75	69			
344- GRID	110801	69	19.8			168.75	69			
345- GRID	110802	69	19.8			168.75	69			
346- GRID	110803	69	19.8			168.75	69			
347- GRID	110900	69	19.8			188.75	69			
348- GRID	110901	69	19.8			188.75	69			
349- GRID	110902	69	19.8			188.75	69			
350- GRID	110903	69	19.8			188.75	69			

S O R T E D   B U L K   D A T A   E C H O

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
351- GRID	111000	69			19.8					209.13	69									
352- GRID	111001	69			19.8					209.13	69									
353- GRID	111002	69			19.8					209.13	69									
354- GRID	111003	69			19.8					209.13	69									
355- GRID	111100	69			19.8					229.156	69									
356- GRID	111101	69			19.8					229.156	69									
357- GRID	111102	69			19.8					229.156	69									
358- GRID	111103	69			19.8					229.156	69									
359- GRID	111200	69			19.8					237.30	69									
360- GRID	111201	69			19.8					237.30	69									
361- GRID	111202	69			19.8					237.30	69									
362- GRID	111203	69			19.8					237.30	69									
363- GRID	111300	69			19.8					245.753669										
364- GRID	111301	69			19.8					245.753669										
365- GRID	111302	69			19.8					245.753669										
366- GRID	111303	69			19.8					245.753669										
367- GRID	111400	69			19.8					258.125	20014									
368- GRID	111401	69			19.8					258.125	20014									
369- GRID	111402	69			19.8					258.125	20014									
370- GRID	111403	69			19.8					258.125	20014									
371- GRID	111500	69			17.91					260.92	20015									
372- GRID	111501	69			17.91					260.92	20015									
373- GRID	111502	69			17.91					260.92	20015									
374- GRID	111503	69			17.91					260.92	20015									
375- GRID	111600	69			12.61					265.98	20016									
376- GRID	111601	69			12.61					265.98	20016									
377- GRID	111602	69			12.61					265.98	20016									
378- GRID	111603	69			12.61					265.98	20016									
379- GRID	111700	69			6.40					268.75	20017									
380- GRID	111701	69			6.40					268.75	20017									
381- GRID	111702	69			6.40					268.75	20017									
382- GRID	111703	69			6.40					268.75	20017									
383- GRIDB	5013	5001			9.000		.000		23.000	10002							1012			
384- GRIDB	5014	5001			9.000		22.500		23.000	10002							1012			
385- GRIDB	5015	5001			9.000		45.000		23.000	10002							1012			
386- GRIDB	5016	5001			9.000		67.500		23.000	10002							1012			
387- GRIDB	5017	5001			9.000		90.000		23.000	10002							1012			
388- GRIDB	5018	5001			9.000		112.500		23.000	10002							1012			
389- GRIDB	5019	5001			9.000		135.000		23.000	10002							1012			
390- GRIDB	5020	5001			9.000		157.500		23.000	10002							1012			
391- GRIDB	5021	5001			9.000		180.000		23.000	10002							1012			
392- GRIDB	5026	5001			14.200		.000		31.930	10003							1025			
393- GRIDB	5027	5001			14.200		22.500		31.930	10003							1025			
394- GRIDB	5028	5001			14.200		45.000		31.930	10003							1025			
395- GRIDB	5029	5001			14.200		67.500		31.930	10003							1025			
396- GRIDB	5030	5001			14.200		90.000		31.930	10003							1025			
397- GRIDB	5031	5001			14.200		112.500		31.930	10003							1025			
398- GRIDB	5032	5001			14.200		135.000		31.930	10003							1025			
399- GRIDB	5033	5001			14.200		157.500		31.930	10003							1025			
400- GRIDB	5034	5001			14.200		180.000		31.930	10003							1025			

## S O R T E D B U L K D A T A E C H O

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
401-GRIDB	5039		5001		16.200		.000		40.380		10004						1038			
402-GRIDB	5040		5001		16.200		22.500		40.380		10004						1038			
403-GRIDB	5041		5001		16.200		45.000		40.380		10004						1038			
404-GRIDB	5042		5001		16.200		67.500		40.380		10004						1038			
405-GRIDB	5043		5001		16.200		90.000		40.380		10004						1038			
406-GRIDB	5044		5001		16.200		112.500		40.380		10004						1038			
407-GRIDB	5045		5001		16.200		135.000		40.380		10004						1038			
408-GRIDB	5046		5001		16.200		157.500		40.380		10004						1038			
409-GRIDB	5047		5001		16.200		180.000		40.380		10004						1038			
410-GRIDB	5052		5001		18.000		.000		48.380		10005						1051			
411-GRIDB	5053		5001		18.000		22.500		48.380		10005						1051			
412-GRIDB	5054		5001		18.000		45.000		48.380		10005						1051			
413-GRIDB	5055		5001		18.000		67.500		48.380		10005						1051			
414-GRIDB	5056		5001		18.000		90.000		48.380		10005						1051			
415-GRIDB	5057		5001		18.000		112.500		48.380		10005						1051			
416-GRIDB	5058		5001		18.000		135.000		48.380		10005						1051			
417-GRIDB	5059		5001		18.000		157.500		48.380		10005						1051			
418-GRIDB	5060		5001		18.000		180.000		48.380		10005						1051			
419-GRIDB	5065		5001		19.875		.000		56.280		10006						1064			
420-GRIDB	5066		5001		19.875		22.500		56.280		10006						1064			
421-GRIDB	5067		5001		19.875		45.000		56.280		10006						1064			
422-GRIDB	5068		5001		19.875		67.500		56.280		10006						1064			
423-GRIDB	5069		5001		19.875		90.000		56.280		10006						1064			
424-GRIDB	5070		5001		19.875		112.500		56.280		10006						1064			
425-GRIDB	5071		5001		19.875		135.000		56.280		10006						1064			
426-GRIDB	5072		5001		19.875		157.500		56.280		10006						1064			
427-GRIDB	5073		5001		19.875		180.000		56.280		10006						1064			
428-GRIDB	5078		5001		19.875		.000		65.780		5100						1077			
429-GRIDB	5079		5001		19.875		22.500		65.780		5100						1077			
430-GRIDB	5080		5001		19.875		45.000		65.780		5100						1077			
431-GRIDB	5081		5001		19.875		67.500		65.780		5100						1077			
432-GRIDB	5082		5001		19.875		90.000		65.780		5100						1077			
433-GRIDB	5083		5001		19.875		112.500		65.780		5100						1077			
434-GRIDB	5084		5001		19.875		135.000		65.780		5100						1077			
435-GRIDB	5085		5001		19.875		157.500		65.780		5100						1077			
436-GRIDB	5086		5001		19.875		180.000		65.780		5100						1077			
437-GRIDB	5091		5001		19.875		.000		71.780		5100						1090			
438-GRIDB	5092		5001		19.875		22.500		71.780		5100						1090			
439-GRIDB	5093		5001		19.875		45.000		71.780		5100						1090			
440-GRIDB	5094		5001		19.875		67.500		71.780		5100						1090			
441-GRIDB	5095		5001		19.875		90.000		71.780		5100						1090			
442-GRIDB	5096		5001		19.875		112.500		71.780		5100						1090			
443-GRIDB	5097		5001		19.875		135.000		71.780		5100						1090			
444-GRIDB	5098		5001		19.875		157.500		71.780		5100						1090			
445-GRIDB	5099		5001		19.875		180.000		71.780		5100						1090			
446-GRIDB	5104		5001		19.875		.000		77.780		5100						1103			
447-GRIDB	5105		5001		19.875		22.500		77.780		5100						1103			
448-GRIDB	5106		5001		19.875		45.000		77.780		5100						1103			
449-GRIDB	5107		5001		19.875		67.500		77.780		5100						1103			
450-GRIDB	5108		5001		19.875		90.000		77.780		5100						1103			

## SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
451- GRIDB	5109	5001	19.875	112.500	77.780	5100			1103	
452- GRIDB	5110	5001	19.875	135.000	77.780	5100			1103	
453- GRIDB	5111	5001	19.875	157.500	77.780	5100			1103	
454- GRIDB	5112	5001	19.875	180.000	77.780	5100			1103	
455- GRIDB	5117	5001	19.8	.000	83.780	10010			1116	
456- GRIDB	5118	5001	19.8	22.500	83.780	10010			1116	
457- GRIDB	5119	5001	19.8	45.000	83.780	10010			1116	
458- GRIDB	5120	5001	19.8	67.500	83.780	10010			1116	
459- GRIDB	5121	5001	19.8	90.000	83.780	10010			1116	
460- GRIDB	5122	5001	19.8	112.500	83.780	10010			1116	
461- GRIDB	5123	5001	19.8	135.000	83.780	10010			1116	
462- GRIDB	5124	5001	19.8	157.500	83.780	10010			1116	
463- GRIDB	5125	5001	19.8	180.000	83.780	10010			1116	
464- GRIDB	5130	5001	18.54	.0	87.93	10011			1129	
465- GRIDB	5131	5001	18.54	22.5	87.93	10011			1129	
466- GRIDB	5132	5001	18.54	45.0	87.93	10011			1129	
467- GRIDB	5133	5001	18.54	67.5	87.93	10011			1129	
468- GRIDB	5134	5001	18.54	90.0	87.93	10011			1129	
469- GRIDB	5135	5001	18.54	112.5	87.93	10011			1129	
470- GRIDB	5136	5001	18.54	135.0	87.93	10011			1129	
471- GRIDB	5137	5001	18.54	157.5	87.93	10011			1129	
472- GRIDB	5138	5001	18.54	180.0	87.93	10011			1129	
473- GRIDB	5143	5001	16.28	.0	91.28	10012			1142	
474- GRIDB	5144	5001	16.28	22.5	91.28	10012			1142	
475- GRIDB	5145	5001	16.28	45.0	91.28	10012			1142	
476- GRIDB	5145	5001	16.28	67.5	91.28	10012			1142	
477- GRIDB	5147	5001	16.28	90.0	91.28	10012			1142	
478- GRIDB	5148	5001	16.28	112.5	91.28	10012			1142	
479- GRIDB	5149	5001	16.28	135.0	91.28	10012			1142	
480- GRIDB	5150	5001	16.28	157.5	91.28	10012			1142	
481- GRIDB	5151	5001	16.28	180.0	91.28	10012			1142	
482- GRIDB	5156	5001	12.29	.0	94.53	10013			1154	
483- GRIDB	5157	5001	12.29	22.5	94.53	10013			1154	
484- GRIDB	5158	5001	12.29	45.0	94.53	10013			1154	
485- GRIDB	5159	5001	12.29	67.5	94.53	10013			1154	
486- GRIDB	5160	5001	12.29	90.0	94.53	10013			1154	
487- GRIDB	5161	5001	12.29	112.5	94.53	10013			1154	
488- GRIDB	5162	5001	12.29	135.0	94.53	10013			1154	
489- GRIDB	5163	5001	12.29	157.5	94.53	10013			1154	
490- GRIDB	5164	5001	12.29	180.0	94.53	10013			1154	
491- GRIDB	5169	5001	9.274	.0	96.083	10014			1166	
492- GRIDB	5170	5001	9.274	22.5	96.083	10014			1166	
493- GRIDB	5171	5001	9.274	45.0	96.083	10014			1166	
494- GRIDB	5172	5001	9.274	67.5	96.083	10014			1166	
495- GRIDB	5173	5001	9.274	90.0	96.083	10014			1166	
496- GRIDB	5174	5001	9.274	112.5	96.083	10014			1166	
497- GRIDB	5175	5001	9.274	135.0	96.083	10014			1166	
498- GRIDB	5176	5001	9.274	157.5	96.083	10014			1166	
499- GRIDB	5177	5001	9.274	180.0	96.083	10014			1166	
500- GRIDB	5182	5001	5.266	.0	97.386	10015			1179	

## SORTED BULK DATA ECHO

CARD

CJUNT.	1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
501-GRIDB	5183	5001	5.266	22.5	97.386	10015			1179	
502-GRIDB	5184	5001	5.266	45.	97.386	10015			1179	
503-GRIDB	5185	5001	5.266	67.5	97.386	10015			1179	
504-GRIDB	5186	5001	5.266	90.	97.386	10015			1179	
505-GRIDB	5187	5001	5.266	112.5	97.386	10015			1179	
506-GRIDB	5188	5001	5.266	135.0	97.386	10015			1179	
507-GRIDB	5189	5001	5.266	157.5	97.386	10015			1179	
508-GRIDB	5190	5001	5.266	180.	97.386	10015			1179	
509-GRIDB	5195	5001	1.785	.0	97.912	10016			1178	
510-GRIDB	5196	5001	1.785	22.5	97.912	10016			1178	
511-GRIDB	5197	5001	1.785	45.	97.912	10016			1178	
512-GRIDB	5198	5001	1.785	67.5	97.912	10016			1178	
513-GRIDB	5199	5001	1.785	90.	97.912	10016			1178	
514-GRIDB	5200	5001	1.785	112.5	97.912	10016			1178	
515-GRIDB	5201	5001	1.785	135.0	97.912	10016			1178	
516-GRIDB	5202	5001	1.785	157.5	97.912	10016			1178	
517-GRIDB	5203	5001	1.785	180.	97.912	10016			1178	
518-GRIDB	8170	69	19.80	.0	128.35	5100			2181	
519-GRIDB	8171	69	19.80	22.5	128.35	5100			2181	
520-GRIDB	8172	69	19.80	45.0	128.35	5100			2181	
521-GRIDB	8173	69	19.80	67.5	128.35	5100			2181	
522-GRIDB	8174	69	19.80	90.0	128.35	5100			2181	
523-GRIDB	8175	69	19.80	112.5	128.35	5100			2181	
524-GRIDB	8176	69	19.80	135.0	128.35	5100			2181	
525-GRIDB	8177	69	19.80	157.5	128.35	5100			2181	
526-GRIDB	8178	69	19.80	180.0	128.35	5100			2181	
527-GRIDB	8190	69	19.80	.0	139.06	5100			2201	
528-GRIDB	8191	69	19.80	22.5	139.06	5100			2201	
529-GRIDB	8192	69	19.80	45.0	139.06	5100			2201	
530-GRIDB	8193	69	19.80	67.5	139.06	5100			2201	
531-GRIDB	8194	69	19.80	90.0	139.06	5100			2201	
532-GRIDB	8195	69	19.80	112.5	139.06	5100			2201	
533-GRIDB	8196	69	19.80	135.0	139.06	5100			2201	
534-GRIDB	8197	69	19.80	157.5	139.06	5100			2201	
535-GRIDB	8198	69	19.80	180.0	139.06	5100			2201	
536-GRIDB	8210	69	19.80	.0	148.756	5100			2221	
537-GRIDB	8211	69	19.80	22.5	148.756	5100			2221	
538-GRIDB	8212	69	19.80	45.0	148.756	5100			2221	
539-GRIDB	8213	69	19.80	67.5	148.756	5100			2221	
540-GRIDB	8214	69	19.80	90.0	148.756	5100			2221	
541-GRIDB	8215	69	19.80	112.5	148.756	5100			2221	
542-GRIDB	8216	69	19.80	135.0	148.756	5100			2221	
543-GRIDB	8217	69	19.80	157.5	148.756	5100			2221	
544-GRIDB	8218	69	19.80	180.0	148.756	5100			2221	
545-GRIDB	8230	59	19.80	.0	168.75	5100			2241	
546-GRIDB	8231	69	19.80	22.5	168.75	5100			2241	
547-GRIDB	8232	69	19.80	45.0	168.75	5100			2241	
548-GRIDB	8233	69	19.80	67.5	168.75	5100			2241	
549-GRIDB	8234	59	19.80	90.0	168.75	5100			2241	
550-GRIDB	8235	69	19.80	112.5	168.75	5100			2241	

## S O R T E D B U L K D A T A E C H O

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
551- GRIDB	8236	69	19.80	135.0	168.75	5100			2241	
552- GRIDB	8237	69	19.80	157.5	168.75	5100			2241	
553- GRIDB	8238	69	19.80	180.0	168.75	5100			2241	
554- GRIDB	8250	69	19.80	.0	188.75	5100			2261	
555- GRIDB	8251	69	19.80	22.5	188.75	5100			2261	
556- GRIDB	8252	69	19.80	45.0	188.75	5100			2261	
557- GRIDB	8253	69	19.80	67.5	188.75	5100			2261	
558- GRIDB	8254	69	19.80	90.0	188.75	5100			2261	
559- GRIDB	8255	69	19.80	112.5	188.75	5100			2261	
560- GRIDB	8256	69	19.80	135.0	188.75	5100			2261	
561- GRIDB	8257	69	19.80	157.5	188.75	5100			2261	
562- GRIDB	8258	69	19.80	180.0	188.75	5100			2261	
563- GRIDB	8270	69	19.80	.0	209.13	5100			2281	
564- GRIDB	8271	69	19.80	22.5	209.13	5100			2281	
565- GRIDB	8272	69	19.80	45.0	209.13	5100			2281	
566- GRIDB	8273	69	19.80	67.5	209.13	5100			2281	
567- GRIDB	8274	69	19.80	90.0	209.13	5100			2281	
568- GRIDB	8275	69	19.80	112.5	209.13	5100			2281	
569- GRIDB	8276	69	19.80	135.0	209.13	5100			2281	
570- GRIDB	8277	69	19.80	157.5	209.13	5100			2281	
571- GRIDB	8278	69	19.80	180.0	209.13	5100			2281	
572- GRIDB	8290	69	19.80	.0	229.156	5100			2302	
573- GRIDB	8291	69	19.80	22.5	229.156	5100			2302	
574- GRIDB	8292	69	19.80	45.0	229.156	5100			2302	
575- GRIDB	8293	69	19.80	67.5	229.156	5100			2302	
576- GRIDB	8294	69	19.80	90.0	229.156	5100			2302	
577- GRIDB	8295	69	19.80	112.5	229.156	5100			2302	
578- GRIDB	8296	69	19.80	135.0	229.156	5100			2302	
579- GRIDB	8297	69	19.80	157.5	229.156	5100			2302	
580- GRIDB	8298	69	19.80	180.0	229.156	5100			2302	
581- GRIDB	8310	69	19.80	.0	237.30	5100			2321	
582- GRIDB	8311	69	19.80	22.5	237.30	5100			2321	
583- GRIDB	8312	69	19.80	45.0	237.30	5100			2321	
584- GRIDB	8313	69	19.80	67.5	237.30	5100			2321	
585- GRIDB	8314	69	19.80	90.0	237.30	5100			2321	
586- GRIDB	8315	69	19.80	112.5	237.30	5100			2321	
587- GRIDB	8316	69	19.80	135.0	237.30	5100			2321	
588- GRIDB	8317	69	19.80	157.5	237.30	5100			2321	
589- GRIDB	8318	69	19.80	180.0	237.30	5100			2321	
590- GRIDB	8330	69	19.80	.0	245.75365	100			2344	
591- GRIDB	8332	69	19.80	22.5	245.75365	100			2344	
592- GRIDB	8333	69	19.80	45.0	245.75365	100			2344	
593- GRIDB	8335	69	19.80	67.5	245.75365	100			2344	
594- GRIDB	8336	69	19.80	90.0	245.75365	100			2344	
595- GRIDB	8337	69	19.80	112.5	245.75365	100			2344	
596- GRIDB	8338	69	19.80	135.0	245.75365	100			2344	
597- GRIDB	8339	69	19.80	157.5	245.75365	100			2344	
598- GRIDB	8340	69	19.80	180.0	245.75365	100			2344	
599- GRIDB	8370	69	19.80	.0	258.125	20014			2381	
600- GRIDB	8371	69	19.80	22.5	258.125	20014			2381	

## SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
601-GRIDB	8372	69	19.80	45.0	258.125	20014			2381	
602-GRIDB	8373	69	19.80	67.5	258.125	20014			2381	
603-GRIDB	8374	69	19.80	90.0	258.125	20014			2381	
604-GRIDB	8375	69	19.80	112.5	258.125	20014			2381	
605-GRIDB	8376	69	19.80	135.0	258.125	20014			2381	
606-GRIDB	8377	69	19.80	157.5	258.125	20014			2381	
607-GRIDB	8378	69	19.80	180.0	258.125	20014			2381	
608-GRIDB	8390	69	17.91	.0	260.92	20015			2401	
609-GRIDB	8391	69	17.91	22.5	260.92	20015			2401	
610-GRIDB	8392	69	17.91	45.0	260.92	20015			2401	
611-GRIDB	8393	69	17.91	67.5	260.92	20015			2401	
612-GRIDB	8394	69	17.91	90.0	260.92	20015			2401	
613-GRIDB	8395	69	17.91	112.5	260.92	20015			2401	
614-GRIDB	8396	69	17.91	135.0	260.92	20015			2401	
615-GRIDB	8397	69	17.91	157.5	260.92	20015			2401	
616-GRIDB	8398	69	17.91	180.0	260.92	20015			2401	
617-GRIDB	8410	69	12.61	.0	265.98	20016			2420	
618-GRIDB	8411	69	12.61	22.5	265.98	20016			2420	
619-GRIDB	8412	69	12.61	45.0	265.98	20016			2420	
620-GRIDB	8413	69	12.61	67.5	265.98	20016			2420	
621-GRIDB	8414	69	12.61	90.0	265.98	20016			2420	
622-GRIDB	8415	69	12.61	112.5	265.98	20016			2420	
623-GRIDB	8416	69	12.61	135.0	265.98	20016			2420	
624-GRIDB	8417	69	12.61	157.5	265.98	20016			2420	
625-GRIDB	8418	69	12.61	180.0	265.98	20016			2420	
626-GRIDB	8430	69	6.40	.0	268.75	20017			2439	
627-GRIDB	8431	69	6.40	22.5	268.75	20017			2439	
628-GRIDB	8432	69	6.40	45.0	268.75	20017			2439	
629-GRIDB	8433	69	6.40	67.5	268.75	20017			2439	
630-GRIDB	8434	69	6.40	90.0	268.75	20017			2439	
631-GRIDB	8435	69	6.40	112.5	268.75	20017			2439	
632-GRIDB	8436	69	6.40	135.0	268.75	20017			2439	
633-GRIDB	8437	69	6.40	157.5	268.75	20017			2439	
634-GRIDB	8438	69	6.40	180.0	268.75	20017			2439	
635-MPC	1	5013	1	-1.	100 200	1	1.00000		EM501311	
636-EM501311		100201		1	1.00000	100202	1	1.00000	EM501321	
637-EM501321		100203		1	1.00000					
638-MPC	1	5014	1	-1.	100 200	1	1.00000		EM501411	
639-EM501411		100201		1	0.92388	100202	1	0.70711	EM501421	
640-EM501421		100203		1	0.38268					
641-MPC	1	5015	1	-1.	100 200	1	1.00000		EM501511	
642-EM501511		100201		1	0.70711	100202	1	0.00000	EM501521	
643-EM501521		100203		1	-0.70711					
644-MPC	1	5016	1	-1.	100 200	1	1.00000		EM501611	
645-EM501611		100201		1	0.38268	100202	1	-0.70711	EM501621	
646-EM501621		100203		1	0.92388					
647-MPC	1	5017	1	-1.	100 200	1	1.00000		EM501711	
648-EM501711		100201		1	0.00000	100202	1	-1.00000	EM501721	
649-EM501721		100203		1	-0.00000					
650-MPC	1	5018	1	-1.	100 200	1	1.00000		EM501811	



## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
651-EM501811			100201		1-0.38268	100202		1-0.70711		EM501821
652-EM501821			100203		1 0.92388					
653-MPC	1	5019	1		-1.	100200	1	1.00000		EM501911
654-EM501911			100201		1-0.70711	100202		1-0.00000		EM501921
655-EM501921			100203		1 0.70711					
656-MPC	1	5020	1		-1.	100200	1	1.00000		EM502011
657-EM502011			100201		1-0.92388	100202		1 0.70711		EM502021
658-EM502021			100203		1-0.38268					
659-MPC	1	5021	1		-1.	100200	1	1.00000		EM502111
660-EM502111			100201		1-1.00000	100202		1 1.00000		EM502121
661-EM502121			100203		1-1.00000					
662-MPC	1	5026	1		-1.	100300	1	1.00000		EM502611
663-EM502611			100301		1 1.00000	100302		1 1.00000		EM502621
664-EM502621			100303		1 1.00000					
665-MPC	1	5027	1		-1.	100300	1	1.00000		EM502711
666-EM502711			100301		1 0.92388	100302		1 0.70711		EM502721
667-EM502721			100303		1 0.38268					
668-MPC	1	5028	1		-1.	100300	1	1.00000		EM502811
669-EM502811			100301		1 0.70711	100302		1 0.00000		EM502821
670-EM502821			100303		1-0.70711					
671-MPC	1	5029	1		-1.	100300	1	1.00000		EM502911
672-EM502911			100301		1 0.38268	100302		1-0.70711		EM502921
673-EM502921			100303		1-0.92388					
674-MPC	1	5030	1		-1.	100300	1	1.00000		EM503011
675-EM503011			100301		1 0.00000	100302		1-1.00000		EM503021
676-EM503021			100303		1-0.00000					
677-MPC	1	5031	1		-1.	100300	1	1.00000		EM503111
678-EM503111			100301		1-0.38268	100302		1-0.70711		EM503121
679-EM503121			100303		1 0.92388					
680-MPC	1	5032	1		-1.	100300	1	1.00000		EM503211
681-EM503211			100301		1-0.70711	100302		1-0.00000		EM503221
682-EM503221			100303		1 0.70711					
683-MPC	1	5033	1		-1.	100300	1	1.00000		EM503311
684-EM503311			100301		1-0.92388	100302		1 0.70711		EM503321
685-EM503321			100303		1-0.38268					
686-MPC	1	5034	1		-1.	100300	1	1.00000		EM503411
687-EM503411			100301		1-1.00000	100302		1 1.00000		EM503421
688-EM503421			100303		1-1.00000					
689-MPC	1	5039	1		-1.	100400	1	1.00000		EM503911
690-EM503911			100401		1 1.00000	100402		1 1.00000		EM503921
691-EM503921			100403		1 1.00000					
692-MPC	1	5040	1		-1.	100400	1	1.00000		EM504011
693-EM504011			100401		1 0.92388	100402		1 0.70711		EM504021
694-EM504021			100403		1 0.38268					
695-MPC	1	5041	1		-1.	100400	1	1.00000		EM504111
696-EM504111			100401		1 0.70711	100402		1 0.00000		EM504121
697-EM504121			100403		1-0.70711					
698-MPC	1	5042	1		-1.	100400	1	1.00000		EM504211
699-EM504211			100401		1 0.38268	100402		1-0.70711		EM504221
700-EM504221			100403		1-0.92388					

## SORTED BULK DATA ECHO

CARD

CJUNT.	1	2	3	4	5	6	7	8	9	10
701- MPC	1	5043	1	-1.	100400	1	1.00000		EM504311	
702- EM504311		100401		1 0.00000	100402		1-1.00000		EM504321	
703- EM504321		100403		1-0.00000						
704- MPC	1	5044	1	-1.	100400	1	1.00000		EM504411	
705- EM504411		100401		1-0.38268	100402		1-0.70711		EM504421	
706- EM504421		100403		1 0.92388						
707- MPC	1	5045	1	-1.	100400	1	1.00000		EM504511	
708- EM504511		100401		1-0.70711	100402		1-0.00000		EM504521	
709- EM504521		100403		1 0.70711						
710- MPC	1	5046	1	-1.	100400	1	1.00000		EM504611	
711- EM504611		100401		1-0.92388	100402		1 0.70711		EM504621	
712- EM504621		100403		1-0.38268						
713- MPC	1	5047	1	-1.	100400	1	1.00000		EM504711	
714- EM504711		100401		1-1.00000	100402		1 1.00000		EM504721	
715- EM504721		100403		1-1.00000						
716- MPC	1	5052	1	-1.	100500	1	1.00000		EM505211	
717- EM505211		100501		1 1.00000	100502		1 1.00000		EM505221	
718- EM505221		100503		1 1.00000						
719- MPC	1	5053	1	-1.	100500	1	1.00000		EM505311	
720- EM505311		100501		1 0.92388	100502		1 0.70711		EM505321	
721- EM505321		100503		1 0.38268						
722- MPC	1	5054	1	-1.	100500	1	1.00000		EM505411	
723- EM505411		100501		1 0.70711	100502		1 0.00000		EM505421	
724- EM505421		100503		1-0.70711						
725- MPC	1	5055	1	-1.	100500	1	1.00000		EM505511	
726- EM505511		100501		1 0.38268	100502		1-0.70711		EM505521	
727- EM505521		100503		1-0.92388						
728- MPC	1	5056	1	-1.	100500	1	1.00000		EM505611	
729- EM505611		100501		1 0.00000	100502		1-1.00000		EM505621	
730- EM505621		100503		1-0.00000						
731- MPC	1	5057	1	-1.	100500	1	1.00000		EM505711	
732- EM505711		100501		1-0.38268	100502		1-0.70711		EM505721	
733- EM505721		100503		1 0.92388						
734- MPC	1	5058	1	-1.	100500	1	1.00000		EM505811	
735- EM505811		100501		1-0.70711	100502		1-0.00000		EM505821	
736- EM505821		100503		1 0.70711						
737- MPC	1	5059	1	-1.	100500	1	1.00000		EM505911	
738- EM505911		100501		1-0.92388	100502		1 0.70711		EM505921	
739- EM505921		100503		1-0.38268						
740- MPC	1	5060	1	-1.	100500	1	1.00000		EM506011	
741- EM506011		100501		1-1.00000	100502		1 1.00000		EM506021	
742- EM506021		100503		1-1.00000						
743- MPC	1	5065	1	-1.	100600	1	1.00000		EM506511	
744- EM506511		100601		1 1.00000	100602		1 1.00000		EM506521	
745- EM506521		100603		1 1.00000						
746- MPC	1	5066	1	-1.	100600	1	1.00000		EM506611	
747- EM506611		100601		1 0.92388	100602		1 0.70711		EM506621	
748- EM506621		100603		1 0.38268						
749- MPC	1	5067	1	-1.	100600	1	1.00000		EM506711	
750- EM506711		100601		1 0.70711	100602		1 0.00000		EM506721	

## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
751-EMS06721			100603		1-0.70711					
752-MPC	1		5068	1	-1.	100600	1	1.00000		EMS06811
753-EMS06811			100601		1 0.38268	100602		1-0.70711		EMS06821
754-EMS06821			100603		1-0.92388					
755-MPC	1		5069	1	-1.	100600	1	1.00000		EMS06911
756-EMS06911			100601		1 0.00000	100602		1-1.00000		EMS06921
757-EMS06921			100603		1-0.00000					
758-MPC	1		5070	1	-1.	100600	1	1.00000		EMS07011
759-EMS07011			100601		1-0.38268	100602		1-0.70711		EMS07021
760-EMS07021			100603		1 0.92388					
761-MPC	1		5071	1	-1.	100600	1	1.00000		EMS07111
762-EMS07111			100601		1-0.70711	100602		1-0.00000		EMS07121
763-EMS07121			100603		1 0.70711					
764-MPC	1		5072	1	-1.	100600	1	1.00000		EMS07211
765-EMS07211			100601		1-0.92388	100602		1 0.70711		EMS07221
766-EMS07221			100603		1-0.38268					
767-MPC	1		5073	1	-1.	100600	1	1.00000		EMS07311
768-EMS07311			100601		1-1.00000	100602		1 1.00000		EMS07321
769-EMS07321			100603		1-1.00000					
770-MPC	1		5078	1	-1.	100700	1	1.00000		EMS07811
771-EMS07811			100701		1 1.00000	100702		1 1.00000		EMS07821
772-EMS07821			100703		1 1.00000					
773-MPC	1		5079	1	-1.	100700	1	1.00000		EMS07911
774-EMS07911			100701		1 0.92388	100702		1 0.70711		EMS07921
775-EMS07921			100703		1 0.38268					
776-MPC	1		5080	1	-1.	100700	1	1.00000		EMS08011
777-EMS08011			100701		1 0.70711	100702		1 0.00000		EMS08021
778-EMS08021			100703		1-0.70711					
779-MPC	1		5081	1	-1.	100700	1	1.00000		EMS08111
780-EMS08111			100701		1 0.38268	100702		1-0.70711		EMS08121
781-EMS08121			100703		1-0.92388					
782-MPC	1		5082	1	-1.	100700	1	1.00000		EMS08211
783-EMS08211			100701		1 0.00000	100702		1-1.00000		EMS08221
784-EMS08221			100703		1-0.00000					
785-MPC	1		5083	1	-1.	100700	1	1.00000		EMS08311
786-EMS08311			100701		1-0.38268	100702		1-0.70711		EMS08321
787-EMS08321			100703		1 0.92388					
788-MPC	1		5084	1	-1.	100700	1	1.00000		EMS08411
789-EMS08411			100701		1-0.70711	100702		1-0.00000		EMS08421
790-EMS08421			100703		1 0.70711					
791-MPC	1		5085	1	-1.	100700	1	1.00000		EMS08511
792-EMS08511			100701		1-0.92388	100702		1 0.70711		EMS08521
793-EMS08521			100703		1-0.38268					
794-MPC	1		5086	1	-1.	100700	1	1.00000		EMS08611
795-EMS08611			100701		1-1.00000	100702		1 1.00000		EMS08621
796-EMS08621			100703		1-1.00000					
797-MPC	1		5091	1	-1.	100800	1	1.00000		EMS09111
798-EMS09111			100801		1 1.00000	100802		1 1.00000		EMS09121
799-EMS09121			100803		1 1.00000					
800-MPC	1		5092	1	-1.	100800	1	1.00000		EMS09211

## SORTED BULK DATA ECHO

CARD

CJUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
801-EM509211			100801		1 0.92388	100802		1 0.70711		EM509221
802-EM509221			100803		1 0.38268					
803-MPC	1		5093	1	-1.	100800	1	1.00000		EM509311
804-EM509311			100801		1 0.70711	100802		1 0.00000		EM509321
805-EM509321			100803		1-0.70711					
806-MPC	1		5094	1	-1.	100800	1	1.00000		EM509411
807-EM509411			100801		1 0.38268	100802		1-0.70711		EM509421
808-EM509421			100803		1-0.92388					
809-MPC	1		5095	1	-1.	100800	1	1.00000		EM509511
810-EM509511			100801		1 0.00000	100802		1-1.00000		EM509521
811-EM509521			100803		1-0.00000					
812-MPC	1		5096	1	-1.	100800	1	1.00000		EM509611
813-EM509611			100801		1-0.38268	100802		1-0.70711		EM509621
814-EM509621			100803		1 0.92388					
815-MPC	1		5097	1	-1.	100800	1	1.00000		EM509711
816-EM509711			100801		1-0.70711	100802		1-0.00000		EM509721
817-EM509721			100803		1 0.70711					
818-MPC	1		5098	1	-1.	100800	1	1.00000		EM509811
819-EM509811			100801		1-0.92388	100802		1 0.70711		EM509821
820-EM509821			100803		1-0.38268					
821-MPC	1		5099	1	-1.	100800	1	1.00000		EM509911
822-EM509911			100801		1-1.00000	100802		1 1.00000		EM509921
823-EM509921			100803		1-1.00000					
824-MPC	1		5104	1	-1.	100900	1	1.00000		EM510411
825-EM510411			100901		1 1.00000	100902		1 1.00000		EM510421
826-EM510421			100903		1 1.00000					
827-MPC	1		5105	1	-1.	100900	1	1.00000		EM510511
828-EM510511			100901		1 0.92388	100902		1 0.70711		EM510521
829-EM510521			100903		1 0.38268					
830-MPC	1		5106	1	-1.	100900	1	1.00000		EM510611
831-EM510611			100901		1 0.70711	100902		1 0.00000		EM510621
832-EM510621			100903		1-0.70711					
833-MPC	1		5107	1	-1.	100900	1	1.00000		EM510711
834-EM510711			100901		1 0.38268	100902		1-0.70711		EM510721
835-EM510721			100903		1-0.92388					
836-MPC	1		5108	1	-1.	100900	1	1.00000		EM510811
837-EM510811			100901		1 0.00000	100902		1-1.00000		EM510821
838-EM510821			100903		1-0.00000					
839-MPC	1		5109	1	-1.	100900	1	1.00000		EM510911
840-EM510911			100901		1-0.38268	100902		1-0.70711		EM510921
841-EM510921			100903		1 0.92388					
842-MPC	1		5110	1	-1.	100900	1	1.00000		EM511011
843-EM511011			100901		1-0.70711	100902		1-0.00000		EM511021
844-EM511021			100903		1 0.70711					
845-MPC	1		5111	1	-1.	100900	1	1.00000		EM511111
846-EM511111			100901		1-0.92388	100902		1 0.70711		EM511121
847-EM511121			100903		1-0.38268					
848-MPC	1		5112	1	-1.	100900	1	1.00000		EM511211
849-EM511211			100901		1-1.00000	100902		1 1.00000		EM511221
850-EM511221			100903		1-1.00000					

## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
851-MPC	1	5117	1	-1.	101000	1	1.00000			EM511711
852-EM511711		101001		1-1.00000	101002		1-1.00000			EM511721
853-EM511721		101003		1-1.00000						
854-MPC	1	5118	1	-1.	101000	1	1.00000			EM511811
855-EM511811		101001		1-0.92388	101002		1-0.70711			EM511821
856-EM511821		101003		1-0.38268						
857-MPC	1	5119	1	-1.	101000	1	1.00000			EM511911
858-EM511911		101001		1-0.70711	101002		1-0.00000			EM511921
859-EM511921		101003		1-0.70711						
860-MPC	1	5120	1	-1.	101000	1	1.00000			EM512011
861-EM512011		101001		1-0.38268	101002		1-0.70711			EM512021
862-EM512021		101003		1-0.92388						
863-MPC	1	5121	1	-1.	101000	1	1.00000			EM512111
864-EM512111		101001		1-0.00000	101002		1-1.00000			EM512121
865-EM512121		101003		1-0.00000						
866-MPC	1	5122	1	-1.	101000	1	1.00000			EM512211
867-EM512211		101001		1-0.38268	101002		1-0.70711			EM512221
868-EM512221		101003		1-0.92388						
869-MPC	1	5123	1	-1.	101000	1	1.00000			EM512311
870-EM512311		101001		1-0.70711	101002		1-0.00000			EM512321
871-EM512321		101003		1-0.70711						
872-MPC	1	5124	1	-1.	101000	1	1.00000			EM512411
873-EM512411		101001		1-0.92388	101002		1-0.70711			EM512421
874-EM512421		101003		1-0.38268						
875-MPC	1	5125	1	-1.	101000	1	1.00000			EM512511
876-EM512511		101001		1-1.00000	101002		1-1.00000			EM512521
877-EM512521		101003		1-1.00000						
878-MPC	1	5126	1	-1.	101000	1	1.00000			EM512611
879-EM512611		101001		1-0.19732	101002		1-0.92213			EM512621
880-EM512621		101003		1-0.56122						
881-MPC	1	5130	1	-1.	101100	1	1.00000			EM513011
882-EM513011		101101		1-1.00000	101102		1-1.00000			EM513021
883-EM513021		101103		1-1.00000						
884-MPC	1	5131	1	-1.	101100	1	1.00000			EM513111
885-EM513111		101101		1-0.92388	101102		1-0.70711			EM513121
886-EM513121		101103		1-0.38268						
887-MPC	1	5132	1	-1.	101100	1	1.00000			EM513211
888-EM513211		101101		1-0.70711	101102		1-0.00000			EM513221
889-EM513221		101103		1-0.70711						
890-MPC	1	5133	1	-1.	101100	1	1.00000			EM513311
891-EM513311		101101		1-0.38268	101102		1-0.70711			EM513321
892-EM513321		101103		1-0.92388						
893-MPC	1	5134	1	-1.	101100	1	1.00000			EM513411
894-EM513411		101101		1-0.00000	101102		1-1.00000			EM513421
895-EM513421		101103		1-0.00000						
896-MPC	1	5135	1	-1.	101100	1	1.00000			EM513511
897-EM513511		101101		1-0.38268	101102		1-0.70711			EM513521
898-EM513521		101103		1-0.92388						
899-MPC	1	5136	1	-1.	101100	1	1.00000			EM513611
900-EM513611		101101		1-0.70711	101102		1-0.00000			EM513621

## SORTED BULK DATA ECHO

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
901-	EM513621				101103				1	0.70711										
902-	MPC	1		5137	1				-1.	101100	1			1.00000				EM513711		
903-	EM513711				101101				1	-0.92388	101102			1	0.70711			EM513721		
904-	EM513721				101103				1	-0.38268										
905-	MPC	1		5138	1				-1.	101100	1			1.00000				EM513811		
906-	EM513811				101101				1	-1.00000	101102			1	1.00000			EM513821		
907-	EM513821				101103				1	-1.00000										
908-	MPC	1		5143	1				-1.	101200	1			1.00000				EM514311		
909-	EM514311				101201				1	1.00000	101202			1	1.00000			EM514321		
910-	EM514321				101203				1	1.00000										
911-	MPC	1		5144	1				-1.	101200	1			1.00000				EM514411		
912-	EM514411				101201				1	0.92388	101202			1	0.70711			EM514421		
913-	EM514421				101203				1	0.38268										
914-	MPC	1		5145	1				-1.	101200	1			1.00000				EM514511		
915-	EM514511				101201				1	0.70711	101202			1	0.00000			EM514521		
916-	EM514521				101203				1	-0.70711										
917-	MPC	1		5146	1				-1.	101200	1			1.00000				EM514611		
918-	EM514611				101201				1	0.38268	101202			1	-0.70711			EM514621		
919-	EM514621				101203				1	-0.92388										
920-	MPC	1		5147	1				-1.	101200	1			1.00000				EM514711		
921-	EM514711				101201				1	0.00000	101202			1	-1.00000			EM514721		
922-	EM514721				101203				1	-0.00000										
923-	MPC	1		5148	1				-1.	101200	1			1.00000				EM514811		
924-	EM514811				101201				1	-0.38268	101202			1	-0.70711			EM514821		
925-	EM514821				101203				1	0.92388										
926-	MPC	1		5149	1				-1.	101200	1			1.00000				EM514911		
927-	EM514911				101201				1	-0.70711	101202			1	-0.00000			EM514921		
928-	EM514921				101203				1	0.70711										
929-	MPC	1		5150	1				-1.	101200	1			1.00000				EM515011		
930-	EM515011				101201				1	-0.92388	101202			1	0.70711			EM515021		
931-	EM515021				101203				1	-0.38268										
932-	MPC	1		5151	1				-1.	101200	1			1.00000				EM515111		
933-	EM515111				101201				1	-1.00000	101202			1	1.00000			EM515121		
934-	EM515121				101203				1	-1.00000										
935-	MPC	1		5156	1				-1.	101300	1			1.00000				EM515611		
936-	EM515611				101301				1	1.00000	101302			1	1.00000			EM515621		
937-	EM515621				101303				1	1.00000										
938-	MPC	1		5157	1				-1.	101300	1			1.00000				EM515711		
939-	EM515711				101301				1	0.92388	101302			1	0.70711			EM515721		
940-	EM515721				101303				1	0.38268										
941-	MPC	1		5158	1				-1.	101300	1			1.00000				EM515811		
942-	EM515811				101301				1	0.70711	101302			1	0.00000			EM515821		
943-	EM515821				101303				1	-0.70711										
944-	MPC	1		5159	1				-1.	101300	1			1.00000				EM515911		
945-	EM515911				101301				1	0.38268	101302			1	-0.70711			EM515921		
946-	EM515921				101303				1	-0.92388										
947-	MPC	1		5160	1				-1.	101300	1			1.00000				EM516011		
948-	EM516011				101301				1	0.00000	101302			1	-1.00000			EM516021		
949-	EM516021				101303				1	-0.00000										
950-	MPC	1		5161	1				-1.	101300	1			1.00000				EM516111		

## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
951-EM516111			101301		1-0.38268	101302		1-0.70711		EM516121
952-EM516121			101303		1 0.92388					
953-MPC	1	5162	1		-1.	101300	1	1.00000		EM516211
954-EM516211			101301		1-0.70711	101302		1-0.00000		EM516221
955-EM516221			101303		1 0.70711					
956-MPC	1	5163	1		-1.	101300	1	1.00000		EM516311
957-EM516311			101301		1-0.92388	101302		1 0.70711		EM516321
958-EM516321			101303		1-0.38268					
959-MPC	1	5164	1		-1.	101300	1	1.00000		EM516411
960-EM516411			101301		1-1.00000	101302		1 1.00000		EM516421
961-EM516421			101303		1-1.00000					
962-MPC	1	5169	1		-1.	101400	1	1.00000		EM516911
963-EM516911			101401		1 1.00000	101402		1 1.00000		EM516921
964-EM516921			101403		1 1.00000					
965-MPC	1	5170	1		-1.	101400	1	1.00000		EM517011
966-EM517011			101401		1 0.92388	101402		1 0.70711		EM517021
967-EM517021			101403		1 0.38268					
968-MPC	1	5171	1		-1.	101400	1	1.00000		EM517111
969-EM517111			101401		1 0.70711	101402		1 0.00000		EM517121
970-EM517121			101403		1-0.70711					
971-MPC	1	5172	1		-1.	101400	1	1.00000		EM517211
972-EM517211			101401		1 0.38268	101402		1-0.70711		EM517221
973-EM517221			101403		1-0.92388					
974-MPC	1	5173	1		-1.	101400	1	1.00000		EM517311
975-EM517311			101401		1 0.00000	101402		1-1.00000		EM517321
976-EM517321			101403		1-0.00000					
977-MPC	1	5174	1		-1.	101400	1	1.00000		EM517411
978-EM517411			101401		1-0.38268	101402		1-0.70711		EM517421
979-EM517421			101403		1 0.92388					
980-MPC	1	5175	1		-1.	101400	1	1.00000		EM517511
981-EM517511			101401		1-0.70711	101402		1-0.00000		EM517521
982-EM517521			101403		1 0.70711					
983-MPC	1	5176	1		-1.	101400	1	1.00000		EM517611
984-EM517611			101401		1-0.92388	101402		1 0.70711		EM517621
985-EM517621			101403		1-0.38268					
986-MPC	1	5177	1		-1.	101400	1	1.00000		EM517711
987-EM517711			101401		1-1.00000	101402		1 1.00000		EM517721
988-EM517721			101403		1-1.00000					
989-MPC	1	5182	1		-1.	101500	1	1.00000		EM518211
990-EM518211			101501		1 1.00000	101502		1 1.00000		EM518221
991-EM518221			101503		1 1.00000					
992-MPC	1	5183	1		-1.	101500	1	1.00000		EM518311
993-EM518311			101501		1 0.92388	101502		1 0.70711		EM518321
994-EM518321			101503		1 0.38268					
995-MPC	1	5184	1		-1.	101500	1	1.00000		EM518411
996-EM518411			101501		1 0.70711	101502		1 0.00000		EM518421
997-EM518421			101503		1-0.70711					
998-MPC	1	5185	1		-1.	101500	1	1.00000		EM518511
999-EM518511			101501		1 0.38268	101502		1-0.70711		EM518521
1000-EM518521			101503		1-0.92388					

## S O R T E D B U L K D A T A E C H O

## CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1001-MPC	1	5186	1	-1.	101500	1	1.00000		EM518611	
1002-EM518611		101501		1 0.00000	101502		1-1.00000		EM518621	
1003-EM518621		101503		1-0.00000						
1004-MPC	1	5187	1	-1.	101500	1	1.00000		EM518711	
1005-EM518711		101501		1-0.38268	101502		1-0.70711		EM518721	
1006-EM518721		101503		1 0.92388						
1007-MPC	1	5188	1	-1.	101500	1	1.00000		EM518811	
1008-EM518811		101501		1-0.70711	101502		1-0.00000		EM518821	
1009-EM518821		101503		1 0.70711						
1010-MPC	1	5189	1	-1.	101500	1	1.00000		EM518911	
1011-EM518911		101501		1-0.92388	101502		1 0.70711		EM518921	
1012-EM518921		101503		1-0.38268						
1013-MPC	1	5190	1	-1.	101500	1	1.00000		EM519011	
1014-EM519011		101501		1-1.00000	101502		1 1.00000		EM519021	
1015-EM519021		101503		1-1.00000						
1016-MPC	1	5195	1	-1.	101600	1	1.00000		EM519511	
1017-EM519511		101601		1 1.00000	101602		1 1.00000		EM519521	
1018-EM519521		101603		1 1.00000						
1019-MPC	1	5196	1	-1.	101600	1	1.00000		EM519611	
1020-EM519611		101601		1 0.92388	101602		1 0.70711		EM519621	
1021-EM519621		101603		1 0.38268						
1022-MPC	1	5197	1	-1.	101600	1	1.00000		EM519711	
1023-EM519711		101601		1 0.70711	101602		1 0.00000		EM519721	
1024-EM519721		101603		1-0.70711						
1025-MPC	1	5198	1	-1.	101600	1	1.00000		EM519811	
1026-EM519811		101601		1 0.38268	101602		1-0.70711		EM519821	
1027-EM519821		101603		1-0.92388						
1028-MPC	1	5199	1	-1.	101600	1	1.00000		EM519911	
1029-EM519911		101601		1 0.00000	101602		1-1.00000		EM519921	
1030-EM519921		101603		1-0.00000						
1031-MPC	1	5200	1	-1.	101600	1	1.00000		EM520011	
1032-EM520011		101601		1-0.38268	101602		1-0.70711		EM520021	
1033-EM520021		101603		1 0.92388						
1034-MPC	1	5201	1	-1.	101600	1	1.00000		EM520111	
1035-EM520111		101601		1-0.70711	101602		1-0.00000		EM520121	
1036-EM520121		101603		1 0.70711						
1037-MPC	1	5202	1	-1.	101600	1	1.00000		EM520211	
1038-EM520211		101601		1-0.92388	101602		1 0.70711		EM520221	
1039-EM520221		101603		1-0.38268						
1040-MPC	1	5203	1	-1.	101600	1	1.00000		EM520311	
1041-EM520311		101601		1-1.00000	101602		1 1.00000		EM520321	
1042-EM520321		101603		1-1.00000						
1043-MPC	1	8070	1	-1.	110400	1	1.00000		EM807011	
1044-EM807011		110401		1 1.00000	110402		1 1.00000		EM807021	
1045-EM807021		110403		1 1.00000						
1046-MPC	1	8071	1	-1.	110400	1	1.00000		EM807111	
1047-EM807111		110401		1 0.92388	110402		1 0.70711		EM807121	
1048-EM807121		110403		1 0.38268						
1049-MPC	1	8072	1	-1.	110400	1	1.00000		EM807211	
1050-EM807211		110401		1 0.70711	110402		1 0.00000		EM807221	



## SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
1051-EM807221			110403		1-0.70711					
1052-MPC	1		8073	1	-1.	110400	1	1.00000		EM807311
1053-EM807311			110401		1 0.38268	110402		1-0.70711		EM807321
1054-EM807321			110403		1-0.92388					
1055-MPC	1		8074	1	-1.	110400	1	1.00000		EM807411
1056-EM807411			110401		1 0.19732	110402		1-0.92213		EM807421
1057-EM807421			110403		1-0.56122					
1058-MPC	1		8075	1	-1.	110400	1	1.00000		EM807511
1059-EM807511			110401		1 0.00000	110402		1-1.00000		EM807521
1060-EM807521			110403		1-0.00000					
1061-MPC	1		8076	1	-1.	110400	1	1.00000		EM807611
1062-EM807611			110401		1-0.38268	110402		1-0.70711		EM807621
1063-EM807621			110403		1 0.92388					
1064-MPC	1		8077	1	-1.	110400	1	1.00000		EM807711
1065-EM807711			110401		1-0.70711	110402		1-0.00000		EM807721
1066-EM807721			110403		1 0.70711					
1067-MPC	1		8078	1	-1.	110400	1	1.00000		EM807811
1068-EM807811			110401		1-0.92388	110402		1 0.70711		EM807821
1069-EM807821			110403		1-0.38268					
1070-MPC	1		8079	1	-1.	110400	1	1.00000		EM807911
1071-EM807911			110401		1-1.00000	110402		1 1.00000		EM807921
1072-EM807921			110403		1-1.00000					
1073-MPC	1		8110	1	-1.	110100	1	1.00000		EM811011
1074-EM811011			110101		1 1.00000	110102		1 1.00000		EM811021
1075-EM811021			110103		1 1.00000					
1076-MPC	1		8111	1	-1.	110100	1	1.00000		EM811111
1077-EM811111			110101		1 0.92388	110102		1 0.70711		EM811121
1078-EM811121			110103		1 0.38268					
1079-MPC	1		8112	1	-1.	110100	1	1.00000		EM811211
1080-EM811211			110101		1 0.70711	110102		1 0.00000		EM811221
1081-EM811221			110103		1-0.70711					
1082-MPC	1		8113	1	-1.	110100	1	1.00000		EM811311
1083-EM811311			110101		1 0.38268	110102		1-0.70711		EM811321
1084-EM811321			110103		1-0.92388					
1085-MPC	1		8114	1	-1.	110100	1	1.00000		EM811411
1086-EM811411			110101		1 0.19732	110102		1-0.92213		EM811421
1087-EM811421			110103		1-0.56122					
1088-MPC	1		8115	1	-1.	110100	1	1.00000		EM811511
1089-EM811511			110101		1 0.00000	110102		1-1.00000		EM811521
1090-EM811521			110103		1-0.00000					
1091-MPC	1		8116	1	-1.	110100	1	1.00000		EM811611
1092-EM811611			110101		1-0.38268	110102		1-0.70711		EM811621
1093-EM811621			110103		1 0.92388					
1094-MPC	1		8117	1	-1.	110100	1	1.00000		EM811711
1095-EM811711			110101		1-0.70711	110102		1-0.00000		EM811721
1096-EM811721			110103		1 0.70711					
1097-MPC	1		8118	1	-1.	110100	1	1.00000		EM811811
1098-EM811811			110101		1-0.92388	110102		1 0.70711		EM811821
1099-EM811821			110103		1-0.38268					
1100-MPC	1		8119	1	-1.	110100	1	1.00000		EM811911

## SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
1101-EM811911			110101		1-1.00000	110102		1 1.00000		EM811921
1102-EM811921			110103		1-1.00000					
1103-MPC	1		8130	1	-1.	110200	1	1.00000		EM813011
1104-EM813011			110201		1 1.00000	110202		1 1.00000		EM813021
1105-EM813021			110203		1 1.00000					
1106-MPC	1		8131	1	-1.	110200	1	1.00000		EM813111
1107-EM813111			110201		1 0.92388	110202		1 0.70711		EM813121
1108-EM813121			110203		1 0.38268					
1109-MPC	1		8132	1	-1.	110200	1	1.00000		EM813211
1110-EM813211			110201		1 0.70711	110202		1 0.00000		EM813221
1111-EM813221			110203		1-0.70711					
1112-MPC	1		8133	1	-1.	110200	1	1.00000		EM813311
1113-EM813311			110201		1 0.38268	110202		1-0.70711		EM813321
1114-EM813321			110203		1-0.92388					
1115-MPC	1		8134	1	-1.	110200	1	1.00000		EM813411
1116-EM813411			110201		1 0.19732	110202		1-0.92213		EM813421
1117-EM813421			110203		1-0.56122					
1118-MPC	1		8135	1	-1.	110200	1	1.00000		EM813511
1119-EM813511			110201		1 0.00000	110202		1-1.00000		EM813521
1120-EM813521			110203		1-0.00000					
1121-MPC	1		8136	1	-1.	110200	1	1.00000		EM813611
1122-EM813611			110201		1-0.38268	110202		1-0.70711		EM813621
1123-EM813621			110203		1 0.92388					
1124-MPC	1		8137	1	-1.	110200	1	1.00000		EM813711
1125-EM813711			110201		1-0.70711	110202		1-0.00000		EM813721
1126-EM813721			110203		1 0.70711					
1127-MPC	1		8138	1	-1.	110200	1	1.00000		EM813811
1128-EM813811			110201		1-0.92388	110202		1 0.70711		EM813821
1129-EM813821			110203		1-0.38268					
1130-MPC	1		8139	1	-1.	110200	1	1.00000		EM813911
1131-EM813911			110201		1-1.00000	110202		1 1.00000		EM813921
1132-EM813921			110203		1-1.00000					
1133-MPC	1		8150	1	-1.	110300	1	1.00000		EM815011
1134-EM815011			110301		1 1.00000	110302		1 1.00000		EM815021
1135-EM815021			110303		1 1.00000					
1136-MPC	1		8151	1	-1.	110300	1	1.00000		EM815111
1137-EM815111			110301		1 0.92388	110302		1 0.70711		EM815121
1138-EM815121			110303		1 0.38268					
1139-MPC	1		8152	1	-1.	110300	1	1.00000		EM815211
1140-EM815211			110301		1 0.70711	110302		1 0.00000		EM815221
1141-EM815221			110303		1-0.70711					
1142-MPC	1		8153	1	-1.	110300	1	1.00000		EM815311
1143-EM815311			110301		1 0.38268	110302		1-0.70711		EM815321
1144-EM815321			110303		1-0.92388					
1145-MPC	1		8154	1	-1.	110300	1	1.00000		EM815411
1146-EM815411			110301		1 0.19732	110302		1-0.92213		EM815421
1147-EM815421			110303		1-0.56122					
1148-MPC	1		8155	1	-1.	110300	1	1.00000		EM815511
1149-EM815511			110301		1 0.00000	110302		1-1.00000		EM815521
1150-EM815521			110303		1-0.00000					

## SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
1151-MPC	1	8156	1	-1.	110300	1	1.00000			CM815611
1152-CM815611		110301		1-0.38268	110302		1-0.70711			CM815621
1153-CM815621		110303		1 0.92388						
1154-MPC	1	8157	1	-1.	110300	1	1.00000			CM815711
1155-CM815711		110301		1-0.70711	110302		1-0.00000			CM815721
1156-CM815721		110303		1 0.70711						
1157-MPC	1	8158	1	-1.	110300	1	1.00000			CM815811
1158-CM815811		110301		1-0.92388	110302		1 0.70711			CM815821
1159-CM815821		110303		1-0.38268						
1160-MPC	1	8159	1	-1.	110300	1	1.00000			CM815911
1161-CM815911		110301		1-1.00000	110302		1 1.00000			CM815921
1162-CM815921		110303		1-1.00000						
1163-MPC	1	8170	1	-1.	110500	1	1.00000			CM817011
1164-CM817011		110501		1 1.00000	110502		1 1.00000			CM817021
1165-CM817021		110503		1 1.00000						
1166-MPC	1	8171	1	-1.	110500	1	1.00000			CM817111
1167-CM817111		110501		1 0.92388	110502		1 0.70711			CM817121
1168-CM817121		110503		1 0.38268						
1169-MPC	1	8172	1	-1.	110500	1	1.00000			CM817211
1170-CM817211		110501		1 0.70711	110502		1 0.00000			CM817221
1171-CM817221		110503		1-0.70711						
1172-MPC	1	8173	1	-1.	110500	1	1.00000			CM817311
1173-CM817311		110501		1 0.38268	110502		1-0.70711			CM817321
1174-CM817321		110503		1-0.92388						
1175-MPC	1	8174	1	-1.	110500	1	1.00000			CM817411
1176-CM817411		110501		1 0.00000	110502		1-1.00000			CM817421
1177-CM817421		110503		1-0.00000						
1178-MPC	1	8175	1	-1.	110500	1	1.00000			CM817511
1179-CM817511		110501		1-0.38268	110502		1-0.70711			CM817521
1180-CM817521		110503		1 0.92388						
1181-MPC	1	8176	1	-1.	110500	1	1.00000			CM817611
1182-CM817611		110501		1-0.70711	110502		1-0.00000			CM817621
1183-CM817621		110503		1 0.70711						
1184-MPC	1	8177	1	-1.	110500	1	1.00000			CM817711
1185-CM817711		110501		1-0.92388	110502		1 0.70711			CM817721
1186-CM817721		110503		1-0.38268						
1187-MPC	1	8178	1	-1.	110500	1	1.00000			CM817811
1188-CM817811		110501		1-1.00000	110502		1 1.00000			CM817821
1189-CM817821		110503		1-1.00000						
1190-MPC	1	8190	1	-1.	110600	1	1.00000			CM819011
1191-CM819011		110601		1 1.00000	110602		1 1.00000			CM819021
1192-CM819021		110603		1 1.00000						
1193-MPC	1	8191	1	-1.	110600	1	1.00000			CM819111
1194-CM819111		110601		1 0.92388	110602		1 0.70711			CM819121
1195-CM819121		110603		1 0.38268						
1196-MPC	1	8192	1	-1.	110600	1	1.00000			CM819211
1197-CM819211		110601		1 0.70711	110602		1 0.00000			CM819221
1198-CM819221		110603		1-0.70711						
1199-MPC	1	8193	1	-1.	110600	1	1.00000			CM819311
1200-CM819311		110601		1 0.38268	110602		1-0.70711			CM819321

## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1201-EM819321			110603		1-0.92388					
1202-MPC	1		8194	1	-1.	110600	1	1.00000		EM819411
1203-EM819411			110601		1 0.00000	110602		1-1.00000		EM819421
1204-EM819421			110603		1-0.00000					
1205-MPC	1		8195	1	-1.	110600	1	1.00000		EM819511
1206-EM819511			110601		1-0.38268	110602		1-0.70711		EM819521
1207-EM819521			110603		1 0.92388					
1208-MPC	1		8196	1	-1.	110600	1	1.00000		EM819611
1209-EM819611			110601		1-0.70711	110602		1-0.00000		EM819621
1210-EM819621			110603		1 0.70711					
1211-MPC	1		8197	1	-1.	110600	1	1.00000		EM819711
1212-EM819711			110601		1-0.92388	110602		1 0.70711		EM819721
1213-EM819721			110603		1-0.38268					
1214-MPC	1		8198	1	-1.	110600	1	1.00000		EM819811
1215-EM819811			110601		1-1.00000	110602		1 1.00000		EM819821
1216-EM819821			110603		1-1.00000					
1217-MPC	1		8210	1	-1.	110700	1	1.00000		EM821011
1218-EM821011			110701		1 1.00000	110702		1 1.00000		EM821021
1219-EM821021			110703		1 1.00000					
1220-MPC	1		8211	1	-1.	110700	1	1.00000		EM821111
1221-EM821111			110701		1 0.92388	110702		1 0.70711		EM821121
1222-EM821121			110703		1 0.38268					
1223-MPC	1		8212	1	-1.	110700	1	1.00000		EM821211
1224-EM821211			110701		1 0.70711	110702		1 0.00000		EM821221
1225-EM821221			110703		1-0.70711					
1226-MPC	1		8213	1	-1.	110700	1	1.00000		EM821311
1227-EM821311			110701		1 0.38268	110702		1-0.70711		EM821321
1228-EM821321			110703		1-0.92388					
1229-MPC	1		8214	1	-1.	110700	1	1.00000		EM821411
1230-EM821411			110701		1 0.00000	110702		1-1.00000		EM821421
1231-EM821421			110703		1-0.00000					
1232-MPC	1		8215	1	-1.	110700	1	1.00000		EM821511
1233-EM821511			110701		1-0.38268	110702		1-0.70711		EM821521
1234-EM821521			110703		1 0.92388					
1235-MPC	1		8216	1	-1.	110700	1	1.00000		EM821611
1236-EM821611			110701		1-0.70711	110702		1-0.00000		EM821621
1237-EM821621			110703		1 0.70711					
1238-MPC	1		8217	1	-1.	110700	1	1.00000		EM821711
1239-EM821711			110701		1-0.92388	110702		1 0.70711		EM821721
1240-EM821721			110703		1-0.38268					
1241-MPC	1		8218	1	-1.	110700	1	1.00000		EM821811
1242-EM821811			110701		1-1.00000	110702		1 1.00000		EM821821
1243-EM821821			110703		1-1.00000					
1244-MPC	1		8230	1	-1.	110800	1	1.00000		EM823011
1245-EM823011			110801		1 1.00000	110802		1 1.00000		EM823021
1246-EM823021			110803		1 1.00000					
1247-MPC	1		8231	1	-1.	110800	1	1.00000		EM823111
1248-EM823111			110801		1 0.92388	110802		1 0.70711		EM823121
1249-EM823121			110803		1 0.38268					
1250-MPC	1		8232	1	-1.	110800	1	1.00000		EM823211

## SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
CJUNT.	1	..	2	..	3	..	4	..	5	..
1251-EM823211			110801		1 0.70711	110802		1 0.00000		EM823221
1252-EM823221			110803		1-0.70711					
1253-MPC	1		8233	1	-1.	110800	1	1.00000		EM823311
1254-EM823311			110801		1 0.38268	110802		1-0.70711		EM823321
1255-EM823321			110803		1-0.92388					
1256-MPC	1		8234	1	-1.	110800	1	1.00000		EM823411
1257-EM823411			110801		1 0.00000	110802		1-1.00000		EM823421
1258-EM823421			110803		1-0.00000					
1259-MPC	1		8235	1	-1.	110800	1	1.00000		EM823511
1260-EM823511			110801		1-0.38268	110802		1-0.70711		EM823521
1261-EM823521			110803		1 0.92388					
1262-MPC	1		8236	1	-1.	110800	1	1.00000		EM823611
1263-EM823611			110801		1-0.70711	110802		1-0.00000		EM823621
1264-EM823621			110803		1 0.70711					
1265-MPC	1		8237	1	-1.	110800	1	1.00000		EM823711
1266-EM823711			110801		1-0.92388	110802		1 0.70711		EM823721
1267-EM823721			110803		1-0.38268					
1268-MPC	1		8238	1	-1.	110800	1	1.00000		EM823811
1269-EM823811			110801		1-1.00000	110802		1 1.00000		EM823821
1270-EM823821			110803		1-1.00000					
1271-MPC	1		8250	1	-1.	110900	1	1.00000		EM825011
1272-EM825011			110901		1 1.00000	110902		1 1.00000		EM825021
1273-EM825021			110903		1 1.00000					
1274-MPC	1		8251	1	-1.	110900	1	1.00000		EM825111
1275-EM825111			110901		1 0.92388	110902		1 0.70711		EM825121
1276-EM825121			110903		1 0.38268					
1277-MPC	1		8252	1	-1.	110900	1	1.00000		EM825211
1278-EM825211			110901		1 0.70711	110902		1 0.00000		EM825221
1279-EM825221			110903		1-0.70711					
1280-MPC	1		8253	1	-1.	110900	1	1.00000		EM825311
1281-EM825311			110901		1 0.38268	110902		1-0.70711		EM825321
1282-EM825321			110903		1-0.92388					
1283-MPC	1		8254	1	-1.	110900	1	1.00000		EM825411
1284-EM825411			110901		1 0.00000	110902		1-1.00000		EM825421
1285-EM825421			110903		1-0.00000					
1286-MPC	1		8255	1	-1.	110900	1	1.00000		EM825511
1287-EM825511			110901		1-0.38268	110902		1-0.70711		EM825521
1288-EM825521			110903		1 0.92388					
1289-MPC	1		8256	1	-1.	110900	1	1.00000		EM825611
1290-EM825611			110901		1-0.70711	110902		1-0.00000		EM825621
1291-EM825621			110903		1 0.70711					
1292-MPC	1		8257	1	-1.	110900	1	1.00000		EM825711
1293-EM825711			110901		1-0.92388	110902		1 0.70711		EM825721
1294-EM825721			110903		1-0.38268					
1295-MPC	1		8258	1	-1.	110900	1	1.00000		EM825811
1296-EM825811			110901		1-1.00000	110902		1 1.00000		EM825821
1297-EM825821			110903		1-1.00000					
1298-MPC	1		8270	1	-1.	111000	1	1.00000		EM827011
1299-EM827011			111001		1 1.00000	111002		1 1.00000		EM827021
1300-EM827021			111003		1 1.00000					

## SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
1301-MPC	1	8271	1	-1.	111000	1	1.00000		EM827111	
1302-EM827111		111001		1 0.92388	111002		1 0.70711		EM827121	
1303-EM827121		111003		1 0.38268						
1304-MPC	1	8272	1	-1.	111000	1	1.00000		EM827211	
1305-EM827211		111001		1 0.70711	111002		1 0.00000		EM827221	
1306-EM827221		111003		1-0.70711						
1307-MPC	1	8273	1	-1.	111000	1	1.00000		EM827311	
1308-EM827311		111001		1 0.38268	111002		1-0.70711		EM827321	
1309-EM827321		111003		1-0.92388						
1310-MPC	1	8274	1	-1.	111000	1	1.00000		EM827411	
1311-EM827411		111001		1 0.00000	111002		1-1.00000		EM827421	
1312-EM827421		111003		1-0.00000						
1313-MPC	1	8275	1	-1.	111000	1	1.00000		EM827511	
1314-EM827511		111001		1-0.38268	111002		1-0.70711		EM827521	
1315-EM827521		111003		1 0.92388						
1316-MPC	1	8276	1	-1.	111000	1	1.00000		EM827611	
1317-EM827611		111001		1-0.70711	111002		1-0.00000		EM827621	
1318-EM827621		111003		1 0.70711						
1319-MPC	1	8277	1	-1.	111000	1	1.00000		EM827711	
1320-EM827711		111001		1-0.92388	111002		1 0.70711		EM827721	
1321-EM827721		111003		1-0.38268						
1322-MPC	1	8278	1	-1.	111000	1	1.00000		EM827811	
1323-EM827811		111001		1-1.00000	111002		1 1.00000		EM827821	
1324-EM827821		111003		1-1.00000						
1325-MPC	1	8290	1	-1.	111100	1	1.00000		EM829011	
1326-EM829011		111101		1 1.00000	111102		1 1.00000		EM829021	
1327-EM829021		111103		1 1.00000						
1328-MPC	1	8291	1	-1.	111100	1	1.00000		EM829111	
1329-EM829111		111101		1 0.92388	111102		1 0.70711		EM829121	
1330-EM829121		111103		1 0.38268						
1331-MPC	1	8292	1	-1.	111100	1	1.00000		EM829211	
1332-EM829211		111101		1 0.70711	111102		1 0.00000		EM829221	
1333-EM829221		111103		1-0.70711						
1334-MPC	1	8293	1	-1.	111100	1	1.00000		EM829311	
1335-EM829311		111101		1 0.38268	111102		1-0.70711		EM829321	
1336-EM829321		111103		1-0.92388						
1337-MPC	1	8294	1	-1.	111100	1	1.00000		EM829411	
1338-EM829411		111101		1 0.00000	111102		1-1.00000		EM829421	
1339-EM829421		111103		1-0.00000						
1340-MPC	1	8295	1	-1.	111100	1	1.00000		EM829511	
1341-EM829511		111101		1-0.38268	111102		1-0.70711		EM829521	
1342-EM829521		111103		1 0.92388						
1343-MPC	1	8296	1	-1.	111100	1	1.00000		EM829611	
1344-EM829611		111101		1-0.70711	111102		1-0.00000		EM829621	
1345-EM829621		111103		1 0.70711						
1346-MPC	1	8297	1	-1.	111100	1	1.00000		EM829711	
1347-EM829711		111101		1-0.92388	111102		1 0.70711		EM829721	
1348-EM829721		111103		1-0.38268						
1349-MPC	1	8298	1	-1.	111100	1	1.00000		EM829811	
1350-EM829811		111101		1-1.00000	111102		1 1.00000		EM829821	

## SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1351-EM829821			111103		1-1.00000					
1352-MPC	1		8310	1	-1.	111200	1	1.00000		EM831011
1353-EM831011			111201		1 1.00000	111202		1 1.00000		EM831021
1354-EM831021			111203		1 1.00000					
1355-MPC	1		8311	1	-1.	111200	1	1.00000		EM831111
1356-EM831111			111201		1 0.92388	111202		1 0.70711		EM831121
1357-EM831121			111203		1 0.38268					
1358-MPC	1		8312	1	-1.	111200	1	1.00000		EM831211
1359-EM831211			111201		1 0.70711	111202		1 0.00000		EM831221
1360-EM831221			111203		1-0.70711					
1361-MPC	1		8313	1	-1.	111200	1	1.00000		EM831311
1362-EM831311			111201		1 0.38268	111202		1-0.70711		EM831321
1363-EM831321			111203		1-0.92388					
1364-MPC	1		8314	1	-1.	111200	1	1.00000		EM831411
1365-EM831411			111201		1 0.00000	111202		1-1.00000		EM831421
1366-EM831421			111203		1-0.00000					
1367-MPC	1		8315	1	-1.	111200	1	1.00000		EM831511
1368-EM831511			111201		1-0.38268	111202		1-0.70711		EM831521
1369-EM831521			111203		1 0.92388					
1370-MPC	1		8316	1	-1.	111200	1	1.00000		EM831611
1371-EM831611			111201		1-0.70711	111202		1-0.00000		EM831621
1372-EM831621			111203		1 0.70711					
1373-MPC	1		8317	1	-1.	111200	1	1.00000		EM831711
1374-EM831711			111201		1-0.92388	111202		1 0.70711		EM831721
1375-EM831721			111203		1-0.38268					
1376-MPC	1		8318	1	-1.	111200	1	1.00000		EM831811
1377-EM831811			111201		1-1.00000	111202		1 1.00000		EM831821
1378-EM831821			111203		1-1.00000					
1379-MPC	1		8330	1	-1.	111300	1	1.00000		EM833011
1380-EM833011			111301		1 1.00000	111302		1 1.00000		EM833021
1381-EM833021			111303		1 1.00000					
1382-MPC	1		8331	1	-1.	111300	1	1.00000		EM833111
1383-EM833111			111301		1 0.98079	111302		1 0.92388		EM833121
1384-EM833121			111303		1 0.83147					
1385-MPC	1		8332	1	-1.	111300	1	1.00000		EM833211
1386-EM833211			111301		1 0.92388	111302		1 0.70711		EM833221
1387-EM833221			111303		1 0.38268					
1388-MPC	1		8333	1	-1.	111300	1	1.00000		EM833311
1389-EM833311			111301		1 0.70711	111302		1 0.00000		EM833321
1390-EM833321			111303		1-0.70711					
1391-MPC	1		8334	1	-1.	111300	1	1.00000		EM833411
1392-EM833411			111301		1 0.55557	111302		1-0.38268		EM833421
1393-EM833421			111303		1-0.98079					
1394-MPC	1		8335	1	-1.	111300	1	1.00000		EM833511
1395-EM833511			111301		1 0.38268	111302		1-0.70711		EM833521
1396-EM833521			111303		1-0.92388					
1397-MPC	1		8336	1	-1.	111300	1	1.00000		EM833611
1398-EM833611			111301		1 0.00000	111302		1-1.00000		EM833621
1399-EM833621			111303		1-0.00000					
1400-MPC	1		8337	1	-1.	111300	1	1.00000		EM833711

## S O R T E D B U L K D A T A E C H O

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1401-EM833711			111301		1-0.38268	111302		1-0.70711		EM833721
1402-EM833721			111303		1 0.92388					
1403-MPC	1		8338	1	-1.	111300	1	1.00000		EM833811
1404-EM833811			111301		1-0.70711	111302		1-0.00000		EM833821
1405-EM833821			111303		1 0.70711					
1406-MPC	1		8339	1	-1.	111300	1	1.00000		EM833911
1407-EM833911			111301		1-0.92388	111302		1 0.70711		EM833921
1408-EM833921			111303		1-0.39268					
1409-MPC	1		8340	1	-1.	111300	1	1.00000		EM834011
1410-EM834011			111301		1-1.00000	111302		1 1.00000		EM834021
1411-EM834021			111303		1-1.00000					
1412-MPC	1		8370	1	-1.	111400	1	1.00000		EM837011
1413-EM837011			111401		1 1.00000	111402		1 1.00000		EM837021
1414-EM837021			111403		1 1.00000					
1415-MPC	1		8371	1	-1.	111400	1	1.00000		EM837111
1416-EM837111			111401		1 0.92388	111402		1 0.70711		EM837121
1417-EM837121			111403		1 0.38268					
1418-MPC	1		8372	1	-1.	111400	1	1.00000		EM837211
1419-EM837211			111401		1 0.70711	111402		1 0.00000		EM837221
1420-EM837221			111403		1-0.70711					
1421-MPC	1		8373	1	-1.	111400	1	1.00000		EM837311
1422-EM837311			111401		1 0.39268	111402		1-0.70711		EM837321
1423-EM837321			111403		1-0.92388					
1424-MPC	1		8374	1	-1.	111400	1	1.00000		EM837411
1425-EM837411			111401		1 0.00000	111402		1-1.00000		EM837421
1426-EM837421			111403		1-0.00000					
1427-MPC	1		8375	1	-1.	111400	1	1.00000		EM837511
1428-EM837511			111401		1-0.38268	111402		1-0.70711		EM837521
1429-EM837521			111403		1 0.92388					
1430-MPC	1		8376	1	-1.	111400	1	1.00000		EM837611
1431-EM837611			111401		1-0.70711	111402		1-0.00000		EM837621
1432-EM837621			111403		1 0.70711					
1433-MPC	1		8377	1	-1.	111400	1	1.00000		EM837711
1434-EM837711			111401		1-0.92388	111402		1 0.70711		EM837721
1435-EM837721			111403		1-0.39268					
1436-MPC	1		8378	1	-1.	111400	1	1.00000		EM837811
1437-EM837811			111401		1-1.00000	111402		1 1.00000		EM837821
1438-EM837821			111403		1-1.00000					
1439-MPC	1		8390	1	-1.	111500	1	1.00000		EM839011
1440-EM839011			111501		1 1.00000	111502		1 1.00000		EM839021
1441-EM839021			111503		1 1.00000					
1442-MPC	1		8391	1	-1.	111500	1	1.00000		EM839111
1443-EM839111			111501		1 0.92388	111502		1 0.70711		EM839121
1444-EM839121			111503		1 0.39268					
1445-MPC	1		8392	1	-1.	111500	1	1.00000		EM839211
1446-EM839211			111501		1 0.70711	111502		1 0.00000		EM839221
1447-EM839221			111503		1-0.70711					
1448-MPC	1		8393	1	-1.	111500	1	1.00000		EM839311
1449-EM839311			111501		1 0.38268	111502		1-0.70711		EM839321
1450-EM839321			111503		1-0.92388					



## SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
CJUNT.	1	..	2	..	3	..	4	..	5	..
1451-MPC	1		8394	1	-1.	111500	1	1.00000		EM839411
1452-EM839411			111501		1-0.00000	111502		1-1.00000		EM839421
1453-EM839421			111503		1-0.00000					
1454-MPC	1		8395	1	-1.	111500	1	1.00000		EM839511
1455-EM839511			111501		1-0.38268	111502		1-0.70711		EM839521
1456-EM839521			111503		1 0.92388					
1457-MPC	1		8396	1	-1.	111500	1	1.00000		EM839611
1458-EM839611			111501		1-0.70711	111502		1-0.00000		EM839621
1459-EM839621			111503		1 0.70711					
1460-MPC	1		8397	1	-1.	111500	1	1.00000		EM839711
1461-EM839711			111501		1-0.92388	111502		1 0.70711		EM839721
1462-EM839721			111503		1-0.38268					
1463-MPC	1		8398	1	-1.	111500	1	1.00000		EM839811
1464-EM839811			111501		1-1.00000	111502		1 1.00000		EM839821
1465-EM839821			111503		1-1.00000					
1466-MPC	1		8410	1	-1.	111600	1	1.00000		EM841011
1467-EM841011			111601		1 1.00000	111602		1 1.00000		EM841021
1468-EM841021			111603		1 1.00000					
1469-MPC	1		8411	1	-1.	111600	1	1.00000		EM841111
1470-EM841111			111601		1 0.92388	111602		1 0.70711		EM841121
1471-EM841121			111603		1 0.38268					
1472-MPC	1		8412	1	-1.	111600	1	1.00000		EM841211
1473-EM841211			111601		1 0.70711	111602		1 0.00000		EM841221
1474-EM841221			111603		1-0.70711					
1475-MPC	1		8413	1	-1.	111600	1	1.00000		EM841311
1476-EM841311			111601		1 0.38268	111602		1-0.70711		EM841321
1477-EM841321			111603		1-0.92388					
1478-MPC	1		8414	1	-1.	111600	1	1.00000		EM841411
1479-EM841411			111601		1 0.00000	111602		1-1.00000		EM841421
1480-EM841421			111603		1-0.00000					
1481-MPC	1		8415	1	-1.	111600	1	1.00000		EM841511
1482-EM841511			111601		1-0.38268	111602		1-0.70711		EM841521
1483-EM841521			111603		1 0.92388					
1484-MPC	1		8416	1	-1.	111600	1	1.00000		EM841611
1485-EM841611			111601		1-0.70711	111602		1-0.00000		EM841621
1486-EM841621			111603		1 0.70711					
1487-MPC	1		8417	1	-1.	111600	1	1.00000		EM841711
1488-EM841711			111601		1-0.92388	111602		1 0.70711		EM841721
1489-EM841721			111603		1-0.38268					
1490-MPC	1		8418	1	-1.	111600	1	1.00000		EM841811
1491-EM841811			111601		1-1.00000	111602		1 1.00000		EM841821
1492-EM841821			111603		1-1.00000					
1493-MPC	1		8430	1	-1.	111700	1	1.00000		EM843011
1494-EM843011			111701		1 1.00000	111702		1 1.00000		EM843021
1495-EM843021			111703		1 1.00000					
1496-MPC	1		8431	1	-1.	111700	1	1.00000		EM843111
1497-EM843111			111701		1 0.92388	111702		1 0.70711		EM843121
1498-EM843121			111703		1 0.38268					
1499-MPC	1		8432	1	-1.	111700	1	1.00000		EM843211
1500-EM843211			111701		1 0.70711	111702		1 0.00000		EM843221

## SORTED BULK DATA ECHO

CARD

CJUNT.	1	2	3	4	5	6	7	8	9	10
1501-EM843221			111703		1-0.70711					
1502-MPC	1		8433	1	-1.	111700	1	1.00000		EM843311
1503-EM843311			111701		1 0.38268	111702		1-0.70711		EM843321
1504-EM843321			111703		1-0.92388					
1505-MPC	1		8434	1	-1.	111700	1	1.00000		EM843411
1506-EM843411			111701		1 0.00000	111702		1-1.00000		EM843421
1507-EM843421			111703		1-0.00000					
1508-MPC	1		8435	1	-1.	111700	1	1.00000		EM843511
1509-EM843511			111701		1-0.38268	111702		1-0.70711		EM843521
1510-EM843521			111703		1 0.92388					
1511-MPC	1		8436	1	-1.	111700	1	1.00000		EM843611
1512-EM843611			111701		1-0.70711	111702		1-0.00000		EM843621
1513-EM843621			111703		1 0.70711					
1514-MPC	1		8437	1	-1.	111700	1	1.00000		EM843711
1515-EM843711			111701		1-0.92388	111702		1 0.70711		EM843721
1516-EM843721			111703		1-0.38268					
1517-MPC	1		8438	1	-1.	111700	1	1.00000		EM843811
1518-EM843811			111701		1-1.00000	111702		1 1.00000		EM843821
1519-EM843821			111703		1-1.00000					
1520-OMI T1	0		1001061	1001062	1001063					
1521-OMI T1	0		1001074	1001075	1001076	1001087	1001088	1001089		
1522-OMI T1	0		1001100	1001101	1001102	1001113	1001114	1001115		
1523-OMI T1	0		1001126	1001127	1001128	1001139	1001140	1001141		
1524-OMI T1	0		1001152	1001153	1001165					
1525-OMI T1	0		1002219	1002220	1002239	1002240				
1526-OMI T1	0		1002259	1002260	1002279	1002280	1002300	1002301		
1527-OMI T1	0		1002319	1002320	1002342	1002343	1002379	1002380		
1528-OMI T1	0		1002399	1002400	1002419					
1529-OMI T1	0		2001061	2001062	2001063					
1530-OMI T1	0		2001074	2001075	2001076	2001087	2001088	2001089		
1531-OMI T1	0		2001100	2001101	2001102	2001113	2001114	2001115		
1532-OMI T1	0		2001126	2001127	2001128	2001139	2001140	2001141		
1533-OMI T1	0		2001152	2001153	2001165					
1534-OMI T1	0		2002219	2002220	2002239	2002240				
1535-OMI T1	0		2002259	2002260	2002279	2002280	2002300	2002301		
1536-OMI T1	0		2002319	2002320	2002342	2002343	2002379	2002380		
1537-OMI T1	0		2002399	2002400	2002419					
1538-OMI T1	0		3001061	3001062	3001063					
1539-OMI T1	0		3001074	3001075	3001076	3001087	3001088	3001089		
1540-OMI T1	0		3001100	3001101	3001102	3001113	3001114	3001115		
1541-OMI T1	0		3001126	3001127	3001128	3001139	3001140	3001141		
1542-OMI T1	0		3001152	3001153	3001165					
1543-OMI T1	0		3002219	3002220	3002239	3002240				
1544-OMI T1	0		3002259	3002260	3002279	3002280	3002300	3002301		
1545-OMI T1	0		3002319	3002320	3002342	3002343	3002379	3002380		
1546-OMI T1	0		3002399	3002400	3002419					
1547-OMI T1	0		4001061	4001062	4001063					
1548-OMI T1	0		4001074	4001075	4001076	4001087	4001088	4001089		
1549-OMI T1	0		4001100	4001101	4001102	4001113	4001114	4001115		
1550-OMI T1	0		4001126	4001127	4001128	4001139	4001140	4001141		

## SORTED BULK DATA ECHO

CARD

CJUNT.	1	2	3	4	5	6	7	8	9	10
1551-OMIT1	0		4001152	4001153	4001165					
1552-OMIT1	0		4002219	4002220	4002239	4002240				
1553-OMIT1	0		4002259	4002260	4002279	4002280	4002300	4002301		
1554-OMIT1	0		4002319	4002320	4002342	4002343	4002379	4002380		
1555-OMIT1	0		4002399	4002400	4002419					
1556-PARAM	A999	2.0	.0							
1557-RINGFL	1009	2.4			23.0	1010	4.45		23.0	
1558-RINGFL	1011	6.65			23.0	1012	9.0		23.0	
1559-RINGFL	1022	5.0			31.93	1023	7.75		31.9	
1560-RINGFL	1024	10.75			31.93	1025	14.2		31.9	
1561-RINGFL	1035	5.0			40.38	1036	9.2		40.3	
1562-RINGFL	1037	12.5			40.38	1038	16.2		40.3	
1563-RINGFL	1048	5.0			48.38	1049	10.0		48.3	
1564-RINGFL	1050	13.7			48.38	1051	18.0		48.3	
1565-RINGFL	1061	5.0			55.28	1062	10.0		56.2	
1566-RINGFL	1063	15.0			55.28	1064	19.875		56.2	
1567-RINGFL	1074	5.0			65.78	1075	10.0		65.7	
1568-RINGFL	1076	15.0			65.78	1077	19.875		65.7	
1569-RINGFL	1087	5.0			71.78	1088	10.0		71.7	
1570-RINGFL	1089	15.0			71.78	1090	19.875		71.7	
1571-RINGFL	1100	5.0			77.28	1101	10.0		77.2	
1572-RINGFL	1102	15.0			77.28	1103	19.875		77.2	
1573-RINGFL	1113	5.0			83.78	1114	10.0		83.7	
1574-RINGFL	1115	15.0			83.78	1116	19.8		83.7	
1575-RINGFL	1126	5.0			87.93	1127	10.0		87.9	
1576-RINGFL	1128	15.0			87.93	1129	18.54		87.9	
1577-RINGFL	1139	5.0			91.28	1140	10.0		91.2	
1578-RINGFL	1141	13.6			91.28	1142	16.28		91.2	
1579-RINGFL	1152	5.0			94.53	1153	9.0		94.5	
1580-RINGFL	1154	12.29			94.53	1155	5.0		96.0	
1581-RINGFL	1166	9.274			96.083	1178	1.785		97.9	
1582-RINGFL	1179	5.266			97.386					
1583-RINGFL	2179	6.4			128.35	2180	12.61		128.35	
1584-RINGFL	2181	19.8			129.35	2199	6.4		139.06	
1585-RINGFL	2200	12.61			139.06	2201	19.8		139.06	
1586-RINGFL	2219	6.4			149.756	2220	12.61		146.75	
1587-RINGFL	2221	19.8			148.756	2239	6.4		168.75	
1588-RINGFL	2240	12.61			168.75	2241	19.8		168.75	
1589-RINGFL	2259	6.4			198.75	2260	12.61		188.75	
1590-RINGFL	2261	19.8			139.75	2279	6.4		209.13	
1591-RINGFL	2280	12.61			209.13	2281	19.8		205.13	
1592-RINGFL	2300	6.4			229.156	2301	12.61		229.15	
1593-RINGFL	2302	19.8			229.156	2319	6.4		237.3	
1594-RINGFL	2320	12.61			237.3	2321	19.8		237.3	
1595-RINGFL	2342	6.4			245.7536	2343	12.61		245.75	
1596-RINGFL	2344	19.8			245.7536	2379	6.4		259.12	
1597-RINGFL	2380	12.61			258.125	2381	19.8		258.12	
1598-RINGFL	2399	6.4			250.92	2400	12.61		260.92	
1599-RINGFL	2401	17.91			260.92	2419	6.4		265.58	
1600-RINGFL	2420	12.61			265.98	2439	6.4		266.75	

## S O R T E D B U L K D A T A E C H O

C42)

COUNT.	1	2	3	4	5	6	7	8	9	10
1601-SPC1	1	0		1001009	1001010	1001011	1001012	1001022	1001023	
1602-SPC1	1	0		1001024	1001025	1001035	1001036	1001037	1001038	
1603-SPC1	1	0		1001048	1001049	1001050	1001051	1002179	1002180	
1604-SPC1	1	0		1002181	1002199	1002200	1002201			
1605-SPC1	1	0		2001009	2001010	2001011	2001012	2001022	2001023	
1606-SPC1	1	0		2001024	2001025	2001035	2001036	2001037	2001038	
1607-SPC1	1	0		2001048	2001049	2001050	2001051	2002179	2002180	
1608-SPC1	1	0		2002181	2002199	2002200	2002201			
1609-SPC1	1	0		3001009	3001010	3001011	3001012	3001022	3001023	
1610-SPC1	1	0		3001024	3001025	3001035	3001036	3001037	3001038	
1611-SPC1	1	0		3001048	3001049	3001050	3001051	3002179	3002180	
1612-SPC1	1	0		3002181	3002199	3002200	3002201			
1613-SPC1	1	0		4001009	4001010	4001011	4001012	4001022	4001023	
1614-SPC1	1	0		4001024	4001025	4001035	4001036	4001037	4001038	
1615-SPC1	1	0		4001048	4001049	4001050	4001051	4002179	4002180	
1616-SPC1	1	0		4002181	4002199	4002200	4002201			
1617-SPC1	1	3		8329						
1618-SPC1	1	23		8209						
1619-SPC1	1	123		8299	8140	8328	8341	8359	8360	
1620-SPC1	1	23456		5013	THRU	5021				
1621-SPC1	1	23456		5026	THRU	5034				
1622-SPC1	1	23456		5039	THRU	5047				
1623-SPC1	1	23456		5052	THRU	5060				
1624-SPC1	1	23456		5065	THRU	5073				
1625-SPC1	1	23456		5078	THRU	5086				
1626-SPC1	1	23456		5091	THRU	5099				
1627-SPC1	1	23456		5104	THRU	5112				
1628-SPC1	1	23456		5117	THRU	5126				
1629-SPC1	1	23456		5130	THRU	5138				
1630-SPC1	1	23456		5143	THRU	5151				
1631-SPC1	1	23456		5156	THRU	5164				
1632-SPC1	1	23456		5169	THRU	5177				
1633-SPC1	1	23456		5182	THRU	5190				
1634-SPC1	1	23456		5195	THRU	5203				
1635-SPC1	1	23456		8070	THRU	8079				
1636-SPC1	1	23456		8110	THRU	8119				
1637-SPC1	1	23456		8130	THRU	8139				
1638-SPC1	1	23456		8150	THRU	8159				
1639-SPC1	1	23456		8170	THRU	8178				
1640-SPC1	1	23456		8190	THRU	8198				
1641-SPC1	1	23456		8210	THRU	8218				
1642-SPC1	1	23456		8230	THRU	8238				
1643-SPC1	1	23456		8250	THRU	8258				
1644-SPC1	1	23456		8270	THRU	8278				
1645-SPC1	1	23456		8290	THRU	8298				
1646-SPC1	1	23456		8310	THRU	8318				
1647-SPC1	1	23456		8330	THRU	8340				
1648-SPC1	1	23456		8370	THRU	8378				
1649-SPC1	1	23456		8390	THRU	8398				
1650-SPC1	1	23456		8410	THRU	8418				

## SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1651- SPC1	1		23456	8430	THRU	8438					
1652- SPC1	1		23456	100200	THRU	100203					
1653- SPC1	1		23456	100300	THRU	100303					
1654- SPC1	1		23456	100400	THRU	100403					
1655- SPC1	1		23456	100500	THRU	100503					
1656- SPC1	1		23456	100600	THRU	100603					
1657- SPC1	1		23456	100700	THRU	100703					
1658- SPC1	1		23456	100800	THRU	100803					
1659- SPC1	1		23456	100900	THRU	100903					
1660- SPC1	1		23456	101000	THRU	101003					
1661- SPC1	1		23456	101100	THRU	101103					
1662- SPC1	1		23456	101200	THRU	101203					
1663- SPC1	1		23456	101300	THRU	101303					
1664- SPC1	1		23456	101400	THRU	101403					
1665- SPC1	1		23456	101500	THRU	101503					
1666- SPC1	1		23456	101600	THRU	101603					
1667- SPC1	1		23456	110100	THRU	110103					
1668- SPC1	1		23456	110200	THRU	110203					
1669- SPC1	1		23456	110300	THRU	110303					
1670- SPC1	1		23456	110400	THRU	110403					
1671- SPC1	1		23456	110500	THRU	110503					
1672- SPC1	1		23456	110600	THRU	110603					
1673- SPC1	1		23456	110700	THRU	110703					
1674- SPC1	1		23456	110800	THRU	110803					
1675- SPC1	1		23456	110900	THRU	110903					
1676- SPC1	1		23456	111000	THRU	111003					
1677- SPC1	1		23456	111100	THRU	111103					
1678- SPC1	1		23456	111200	THRU	111203					
1679- SPC1	1		23456	111300	THRU	111303					
1680- SPC1	1		23456	111400	THRU	111403					
1681- SPC1	1		23456	111500	THRU	111503					
1682- SPC1	1		23456	111600	THRU	111603					
1683- SPC1	1		23456	111700	THRU	111703					
1684- SPC1	1		123456	5001	5204	8001	8440				
1685- SPC1	1		123456	8010	THRU	8018					
1686- SPC1	1		123456	8030	THRU	8038					
1687- SPC1	1		123456	8050	THRU	8058					
1688- SPC1	1		123456	8350	THRU	8358					

ENDDATA

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
 DMAP-DMAP INSTRUCTION  
 NO.

```

1 BEGIN      NJ.7 DIRECT COMPLEX EIGENVALUE ANALYSIS - SERIES M1 $
2 FILE      KSGX=TAPE/ KGG=TAPE/ GOD=SAVE/ GMD=SAVE $
3 GP1       GEOM1,GEOM2,/GPL,EQEXIN,GPDT,CSTM,BGPD,T,SIL/V,N,LUSET/ C,N,
           123/V,N,NOGPDT $
4 SAVE      _LUSET,NOGPDT $
5 PURGE     USET,GM,GO,KAA,BAA,MAA,K4AA,KFS,EST,ECT,PLTSETX,PLTPAR,GPSETS,
           ELSETS/NOGPDT $
6 CHKPNT    GPL,EQEXIN,GPDT,CSTM,BGPD,T,SIL,USET,GM,GO,KAA,EAA,MAA,K4AA,EST,
           ECT,PLTSETX,PLTPAR,GPSETS,ELSETS $
7 COND      _3LS,NOGPDT $
8 GP2       GEOM2,EQEXIN/ECT $
9 CHKPNT    ECT $
10 PLTSET    PCDB,EQEXIN,ECT/PLTSETX,PLTPAR,GPSETS,ELSETS/V,N,NSIL/ V,N,
           JUMPPLOT $
11 SAVE     NSIL,JUMPPLOT $
12 PRMSG    PLTSETX// $
13 SETVAL    //V,N,PLTFLG/C,N,1/V,N,PFILE/C,N,0 $
14 SAVE     PLTFLG,PFILE $
15 COND     P1,JUMPPLOT $
16 PLJT     PLTPAR,GPSETS,ELSETS,CASECC,BGPD,T,EQEXIN,SIL../PLOTX1/ V,N,
           NSIL/V,N,LUSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $
17 SAVE     PFILE $
18 PRMSG    PLJT1// $
19 LABEL    P1 $
20 CHKPNT    PLTPAR,GPSETS,ELSETS $
21 GP3      GEOM3,EQEXIN,GEOM2/,GPTT/C,N,123/V,N,NOGRAV/C,N,123 $
22 CHKPNT    GPTT $

```

NASTRAN SOURCE PROGRAM COMPILATION  
 DMAP-DMAP INSTRUCTION  
 NO.

```

23  TAIL,      .ECT, EPT, BGPDT, SIL, GPTT, CSTM/EST, .GEI, ECPT, GPCT/V, N, LUSET/ C, N,
              123/V, N, NOSIMP=-1/C, N, 0/V, N, NOGENL=-1/V, N, GENEL $

24  SAVE      NOSIMP, NOGENL, GENEL $

25  PURGE     K4GG, GPST, DGPST, MGG, BGG, K4NN, K4FF, K4AA, MNN, MFF, MAA, BNN, BFF, BAA,
              KGGX/NOSIMP / DGPST/GENEL $

26  CKPNT     EST, ECPT, GPCT, GEI, K4GG, GPST, MGG, BGG, KGGX, DGPST, K4NN, K4FF,
              K4AA, MNN, MFF, MAA, BNN, BFF, BAA $

27  COND      L3L1, NOSIMP $

28  S4A1      CSTM, MPT, ECPT, GPCT, DIT/KGGX, K4GG, GPST/V, N, NOGENL/V, N, NCK4GG $

29  SAVE      NJK4GG $

30  PURGE     K4NN, K4FF, K4AA/NOK4GG $

31  CKPNT     KGGX, GPST, K4GG, K4NN, K4FF, K4AA $

32  S4A2      CSTM, MPT, ECPT, GPCT, DIT/MGG, BGG/V, Y, WTMAS=1.0/V, N, NOMGG/ V, N,
              NJBGG=-1/V, Y, COUPMASS/V, Y, CPBAR/V, Y, CPROD/V, Y, CPQUAD1/ V, Y,
              CPQUAD2/V, Y, CPTRIA1/V, Y, CPTRIA2/V, Y, CPTUBE/V, Y, CPQDPLT/ V, Y,
              CPTRPLT/V, Y, CPTRBSC $

33  SAVE      NJMGG, NOBGG $

34  PURGE     BNN, BFF, BAA/NOBGG/MNN, MFF, MAA/NOMGG $

35  CKPNT     MGG, MNN, MFF, MAA, BGG, BNN, BFF, BAA $

36  COND      _3L1, GRDPNT $

37  COND      ERROR3, NOMGG $

38  GPWG      BGPDT, CSTM, EQEXIN, MGG/DGPWG/V, Y, GRDPNT=-1/V, Y, WTMAS $

39  JF        JGPWG, . . . . .//V, N, CARDNO $

40  SAVE      CARDNO $

41  LABEL     _BL1 $

42  EQUJIV    KGGX, KGG/NOGENL $

43  CKPNT     KGG $

44  COND      _BL11, NOGENL $

```

N A S T R A N S O U R C E P R O G R A M C C M P I L A T I O N  
 D4AP-D4AP INSTRUCTION  
 NO.

```

45 SMA3      GEI,KGGX/KGG/V,N,LUSET/V,N,NOGENL/V,N,NQSIMP $
46 CHKPNT    KGG $
47 LABEL     _BL11 $
48 PARAM     //C,N,MPY/V,N,NSKIP/C,N,0/C,N,0 $
49 GP4       CASECC,GEOM4,EQEXIN,SIL,GPD/RTG,,USET//V,N,LUSET/V,N,MPCF1/ V,
             V,MPCF2/V,N,SINGLE/V,N,OMIT/V,N,REACT/V,N,NSKIP/V,N,REPEAT/
             V,N,NQSET=-1/V,N,NOL/V,N,NQA=-1 $
50 SAVE      MPCF1,MPCF2,SINGLE,OMIT,NSKIP,NQSET,REACT,REPEAT,NOL,NQA $
50 MATGPR    GPL,USET,SIL,MGG//C,N,G
50 MATGPR    GPL,USET,SIL,KGG//C,N,G
51 PURGE     G4,GMD/MPCF1/GD,GOD/OMIT/KFS,QPC/SINGLE $
52 EQJIV     <GG,KNN/MPCF1/MGG,MNN/MPCF1/ BGG,BNN/MPCF1/K4GG,K4NN/MPCF1 $
53 CHKPNT    GM,GMD,RG,GD,GOD,KFS,QPC,USET,KNN,MNN,BNN,K4NN $
54 COND      L3L4,GENEL $
55 CJVD      _3L4,NQSIMP $
56 GPSP      GP_,GPST,USET,SIL/OGPST $
57 QF3       JGPST,,,,//V,N,CARDND $
58 SAVE      CARDND $
59 _LABEL    L3L4 $
60 CJVD      _3_2,MPCF2 $
61 MCE1      USET,RG/GM $
62 CHKPNT    G4 $
63 MCE2      USET,GM,KGG,MGG,BGG,K4GG/KNN,MNN,BNN,K4NN $
64 CHKPNT    <NN,MNN,BNN,K4NN $
65 _LABEL    _3L2 $
66 EQJIV     <VN,KFF/SINGLE/MNN,MFF/SINGLE/BNN,BFF/SINGLE/K4NN,K4FF/SINGLE $

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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
43.

```
67 CHKPNT <KFF,MFF,BFF,K4FF $
68 COND LBL3,SINGLE $
69 SCE1 USET,KNN,MNN,BNN,K4NN/KFF,KFS,,MFF,BFF,K4FF $
70 CHKPNT KES,KFF,MFF,3FF,K4FF $
71 LABEL LBL3 $
72 EQUIV KFF,KAA/OMIT/ MFF,MAA/OMIT/BFF,BAA/OMIT/K4FF,K4AA/OMIT $
73 CHKPNT <AA,MAA,BAA,K4AA $
73 MATGPR GPL,USET,SIL,MFF//C,N,F
73 MATGPR GP,,USET,SIL,KFF//C,N,F
74 COND LBL5,OMIT $
75 SM>1 USET,KFF,,,/GO,KAA,KOD,LOO,UOO,,,, $
76 CHKPNT GO,KAA $
77 COND LBLN,NOMGG $
78 SM>2 USET,GO,MFF/MAA $
79 CHKPNT MAA $
80 LABEL LB_M $
81 COND LBLB,NOBGG $
82 SM>2 USET,GO,BFF/BAA $
83 CHKPNT BAA $
84 LABEL LB_B $
85 COND LBL5,NOK4GG $
86 SM>2 USET,GO,K4FF/K4AA $
87 CHKPNT <4AA $
88 LABEL LBL5 $
89 D>D DYNAMICS,GPL,SIL,USET/GPLD,SILD,USETD,TFPOOL,,,,,EED,EGDYN/V,
V,,USET/V,N,LUSE TD/V,N,NOTFL/V,N,ACOLT/V,N,NOPSDL/V,N,NOFRL/
```

N A S T R A N S O U R C E P R O G R A M C C M P I L A T I O N  
 DMAP-DMAP INSTRUCTION  
 NO.

```

          V,N,NONLFT/V,N,NOTRL/V,N,NOEED/C,N,123/V,N,NOJE $
90  SAVE      _USETD,NOUE $
91  EQUIV     GJ,GOD/NOUE/GM,GMD/NOUE $
92  CHKPNT    USETD,EED,EQDYN,TFPOOL,GOD,GMD,SILD,GPLD $
93  PARAM     //C,N,ADD/V,N,NEVER/C,N,1/C,N,0 $
94  PARAM     //C,N,MPY/V,N,REPEATE/C,N,1/C,N,-1 $
95  BMG       MATPOOL,BGPDY,EQEXIN,CSTM/BDPOOL/V,N,NOKBFL/V,N,NOABFL/ V,N,
          MFACT $
96  SAVE      MFACT,NOKBFL,NOABFL $
97  PARAM     //C,N,AND/V,N,NOFL/V,N,NOABFL/V,N,NOKBFL $
98  PURGE     KBFL/NOKBFL/ ABFL/NOABFL $
99  CJVD      _LBLFL3,NOFL $
100 MTRXIN,   ,3DPOOL,EQDYN,,/ABFL,KBFL,/V,N,LUSETD/V,N,NOABFL/V,N,NCKBFL/C,
          N,0 $
101 SAVE      NJABFL,NOKBFL $
101 MATGPR GPL,USET,SIL,A3FL//C,N,P
101 MATGPR GP_,USET,SIL,KBFL//C,N,P
102 _ABEL     _3_FL3 $
103 CHKPNT    ABFL,KBFL $
104 JUMP      LBL13 $
105 _ABEL     L3L13 $
106 PURGE     PHID,CLAMA,OPHID,OQPC1,OCCHIP,OESC1,OEFCL,CPHIP,QPC, K2PP,
          M2PP,32PP,K2DD,M2DD,B2DD/NEVER $
107 CASE      CASECC,/CASEXX/C,N,CEIGN/V,N,REFEATE/V,N,NOLoop $
108 SAVE      REPEATE,NOLoop $
109 CHKPNT    CASEXX $
110 MTRXIN    CASEXX,MATPOOL,EQDYN,,TFPOOL/K2DPP,M2DPP,B2PP/V,N,LUSETD/V,N,

```

NASTRAN SOURCE PROGRAM COMPILATION  
D4AP-D4AP INSTRUCTION

```

ND.
      NOK2DPP/V,N,NOM2DPP/V,N,NOB2PP $
111 SAVE      NOK2DPP,NOM2DPP,NOB2PP $
112 PARAM     //C,N,AND/V,N,NOM2PP/V,N,NOABFL/V,N,NOM2DPP_$
113 PARAM     //C,N,AND/V,N,NOK2PP/V,N,NOFL /V,N,NCK2DPP $
114 EQUIV     <2DPP,K2XPP/NOKBFL/ M2DPP,M2PP/NOABFL $
115 COND      L3LFL1,NOKBFL $
116 EQUIV     K3FL,K2XPP/NOK2DPP $
117 COND      L3LFL1,NOK2DPP $
118 ADD       K3FL,K2DPP/K2XPP $
119 LABEL     LBLFL1 $
120 EQUIV     K2XPP,K2PP/NOABFL $
121 COND      LBLFL2,NOABFL $
122 ADD       ABFL,K2XPP/K2PP/C,N,(-1.0,0.0) $
122 ADD ABFL,M2DPP/M2PP/V,N,MFACT $
125 LABEL     L3_FL2 $
126 PARAM     //C,N,AND/V,N,BDEBA/V,N,NOUE/V,N,NOB2PP $
127 PARAM     //C,N,AND/V,N,MDEMA/V,N,NOUE/V,N,NOM2PP $
128 PARAM     //C,N,AND/V,N,KDEK2/V,N,NOGENL/V,N,NOSIMP $
129 PURGE     <2DD/NOK2PP/M2DD/NOM2PP/B2DD/NOB2PP $
130 EQUIV     M2PP,M2DD/NOA/B2PP,B2DD/NOA/K2PP,K2DD/NOA/MAA,MDD/MDEMA/BAA,
      3DD/BDEBA $
131 CHKPNT    K2PP,M2PP,B2PP,K2DD,M2DD,B2DD,BDD,MDD $
132 COND      _3L18,NOGPDIT $
133 GKAD      USETD,GM,GO,K4A,BAA,MAA,K4AA,K2PP,M2PP,B2PP/KDC,BDD,MDC,GMD,
      G3D,K2DD,M2DD,B2DD/C,N,CMPLEV/C,N,DISP/C,N,DIRECT/C,Y,G=0.0/C,
      V,0.0/C,N,0.0/V,N,NOK2PP/V,N,NOM2PP/V,N,NOB2PP/ V,N,MPCF1/V,
      V,SINGLE/V,N,OMIT/V,N,NOUE/V,N,NOK4GG/V,N,NOBGG/V,N,KDEK2/C,N,
      -1 $

```

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
D4AP-D4AP INSTRUCTION  
NO.

```
134 LABEL      _3L18 $
135 EQJIV      B2DD,BDD/NOBGG/ M2DD,MDD/NOSIMP/ K2DD,KDD/KDEK2 $
136 CHKPNT     KDD,BDD,MDD,GDD,GMD $
136 MATGPR GP_L,USETD,SILD,MDD//C,N,D
136 MATGPR GP_L,USETD,SILD,KDD//C,N,D
136 SEEMAT MGG,KGG,MFF,KFF,ABFL//C,N,PRINT
136 SEEMAT KBF_L,MDD,KDD,,//C,N,PRINT
136 PARTN KDD,P9,/KBP,AEM,,KE/C,N,-1 $
136 TRVSP AEM/AENT $
136 SOLVE KBP,AENT/PDL2/C,N,1/C,N,-1 $
136 ADD PDU2,/PDU3/C,Y,A999=(1.0,0.0) $
136 PARAM //C,N,NOP/V,N,TRUE=-1 $
136 EQJIV PDU3,PDU2/TRUE $
136 CEND PDU409,TRUE $
136 MATPRN PDU3,,,,// $
136 LABEL PDUN09 $
136 MPYAD AEM,PDU2,/MFLD/C,N,0/C,N,-1 $
136 JJTPUT3 MFLD,PDU2,,//C,N,0/C,Y,N1=AMF/C,Y,N2=APD $
136 MATPRN PDU2,MFLD,AEM,,// $
136 LABEL ERRDR3 $
170 EXIT
171 END      $
```

\*\*NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM\*\*

Appendix C5  
1/8 SCALE EXTERNAL TANK HYDROELASTIC  
VIBRATION ANALYSIS – POST MAX Q  
FILL CONDITION,  $n = 0, 1, 2, 3$

JULY 19. 1974 NASTRAN 5/13/72

N A S T R A N   E X E C U T I V E   C C N T R O L   D E C K   E C H O

ID,ETANK,COPPOLINO  
APP DISP  
SQL 3.0  
TIME 25  
DIAG 2  
DIAG 7.8.13.14.19.21.22  
ALTER 74  
ADD MAA,MFLD/MAH \$  
PARAM //C.N.NOP/V.N.TRUE=-1 \$  
EQUIV MAH,MAA/TRUE \$  
COND MAHNO9.TRUE \$  
MATPRN MAH....// \$  
LABEL MAHNO9 \$  
ALTER 88  
SEEMAT MGG,KGG....//C.N.PRINT \$  
ALTER 91  
MATGPR GPL,USET,SIL,PHIA//C.N.A  
ALTER 107  
SNPYAD PHIA,KAA,PHIA.../KH/C.N.3/C.N.1/C.N.1/C.N.2/C.N.1 \$  
SOLVE MI,KH/WH/C.N.1 \$  
SNPYAD PDU2,PHIA,WH.../PD2/C.N.3 \$  
MATPRN WH,PD2....// \$  
ENDALTER  
CEND

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

C A S E C O N T R O L D E C K E C H O

CARD  
COUNT

```
1  TITLE=EXTERNAL TANK W. FLUID
2  SUBTITLE=HARMONIC REDUCTION
3  MAXLINES=120000
4  SPC=1
5  MPC=1
6  METHOD=1
7  VECTOR=ALL
8  OUTPUT(FLOT)
9  PLOTTER CALCOMP 765,105
10 SET 1 ALL
11 SET 2 = 250 THRU 257
12 SET 3 = 91 THRU 52
13 SET 4 = 5117 THRU 5204
14 SET 5 = 8370 THRU 8440
15 AXES Z,MX,MY
16 MAXIMUM DEFORMATION 10.0
17 FIND SCALE,ORIGIN 1
18 FLOT
19 FLOT MODAL DEFORMATION,SET 1,ORIGIN 1,SHAPE
20 AXES X,MY,Z
21 VIEW = 0.0,0.0,0.0
22 FIND SCALE,ORIGIN 2,SET 2,REGION .4..1,1..1.
23 FLOT MODAL DEFORMATION 0,1,SET 2 ORIGIN 2,SHAPE,
24   SET 2,SYMMETRY Y,SHAPE
25 FIND SCALE,ORIGIN 3,SET 3,REGION .4..1,1..1.
26 FLOT MODAL DEFORMATION 0,1,SET 3 ORIGIN 3,SHAPE,
27   SET 3,SYMMETRY Y,SHAPE
28 AXES MX,Z,MY
29 VIEW = 40.0,0.0,0.0
30 FIND SCALE,ORIGIN 4,SET 4
31 FLOT SET 4 ORIGIN 4,SHAPE
32 FLOT MODAL DEFORMATION,SET 4,ORIGIN 4,SHAPE
33 FIND SCALE,ORIGIN 5,SET 5
34 FLOT SET 5 ORIGIN 5
35 FLOT MODAL DEFORMATION,SET 5,ORIGIN 5,SHAPE
36 BEGIN BULK
```

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED,XSORT WILL RE-ORDER DECK.

SORTED BULK DATA ECHO

CARD.	COUNT	1	2	3	4	5	6	7	8	9	10
1-	CBAR	5517	5517	5117	5118	.0	.0	1.0	1		
2-	CEAR	5518	5517	5118	5119	.0	.0	1.0	1		
3-	CBAR	5519	5517	5119	5120	.0	.0	1.0	1		
4-	CBAR	5520	5517	5120	5121	.0	.0	1.0	1		
5-	CBAR	5521	5517	5121	5122	.0	.0	1.0	1		
6-	CBAR	5522	5517	5122	5123	.0	.0	1.0	1		
7-	CBAR	5523	5517	5123	5124	.0	.0	1.0	1		
8-	CBAR	5524	5517	5124	5125	.0	.0	1.0	1		
9-	CEAR	8440	8440	8070	8071	.0	.0	1.0	1		88440
10-	88440			-.393	0.0	0.0	-.393	0.0	0.0		
11-	CBAR	8441	8440	8071	8072	.0	.0	1.0	1		88441
12-	88441			-.393	0.0	0.0	-.393	0.0	0.0		
13-	CBAR	8442	8440	8072	8073	.0	.0	1.0	1		88442
14-	88442			-.393	0.0	0.0	-.393	0.0	0.0		
15-	CBAR	8443	8440	8073	8074	.0	.0	1.0	1		88443
16-	88443			-.393	0.0	0.0	-.393	0.0	0.0		
17-	CBAR	8444	8440	8074	8075	.0	.0	1.0	1		88444
18-	88444			-.393	0.0	0.0	-.393	0.0	0.0		
19-	CBAR	8445	8440	8075	8076	.0	.0	1.0	1		88445
20-	88445			-.393	0.0	0.0	-.393	0.0	0.0		
21-	CBAR	8446	8440	8076	8077	.0	.0	1.0	1		88446
22-	88446			-.393	0.0	0.0	-.393	0.0	0.0		
23-	CBAR	8447	8440	8077	8078	.0	.0	1.0	1		88447
24-	88447			-.393	0.0	0.0	-.393	0.0	0.0		
25-	CBAR	8448	8440	8078	8079	.0	.0	1.0	1		88448
26-	88448			-.393	0.0	0.0	-.393	0.0	0.0		
27-	CBAR	8450	8450	8170	8171	.0	.0	1.0	1		88450
28-	88450			-.185	0.0	0.0	-.185	0.0	0.0		
29-	CEAR	8451	8450	8171	8172	.0	.0	1.0	1		88451
30-	88451			-.185	0.0	0.0	-.185	0.0	0.0		
31-	CEAR	8452	8450	8172	8173	.0	.0	1.0	1		88452
32-	88452			-.185	0.0	0.0	-.185	0.0	0.0		
33-	CBAR	8453	8450	8173	8174	.0	.0	1.0	1		88453
34-	88453			-.185	0.0	0.0	-.185	0.0	0.0		
35-	CEAR	8454	8450	8174	8175	.0	.0	1.0	1		88454
36-	88454			-.185	0.0	0.0	-.185	0.0	0.0		
37-	CBAR	8455	8450	8175	8176	.0	.0	1.0	1		88455
38-	88455			-.185	0.0	0.0	-.185	0.0	0.0		
39-	CEAR	8456	8450	8176	8177	.0	.0	1.0	1		88456
40-	88456			-.185	0.0	0.0	-.185	0.0	0.0		
41-	CEAR	8457	8450	8177	8178	.0	.0	1.0	1		88457
42-	88457			-.185	0.0	0.0	-.185	0.0	0.0		
43-	CBAR	8460	8460	8190	8191	.0	.0	1.0	1		88460
44-	88460			-.185	0.0	0.0	-.185	0.0	0.0		
45-	CEAR	8461	8460	8191	8192	.0	.0	1.0	1		88461
46-	88461			-.185	0.0	0.0	-.185	0.0	0.0		
47-	CEAR	8462	8460	8192	8193	.0	.0	1.0	1		88462
48-	88462			-.185	0.0	0.0	-.185	0.0	0.0		
49-	CEAR	8463	8460	8193	8194	.0	.0	1.0	1		88463
50-	88463			-.185	0.0	0.0	-.185	0.0	0.0		



EXTERNAL TANK W. FLUID  
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CARD COUNT	1	2	3	4	5	6	7	8	9	10
51- CEAR	8464	8460	8194	8195	.0	.0	1.0	1		88464
52- 88464			-.185	0.0	0.0	-.185	0.0	0.0		
53- CEAR	8465	8460	8195	8196	.0	.0	1.0	1		88465
54- 88465			-.185	0.0	0.0	-.185	0.0	0.0		
55- CEAR	8466	8460	8196	8197	.0	.0	1.0	1		88466
56- 88466			-.185	0.0	0.0	-.185	0.0	0.0		
57- CEAR	8467	8460	8197	8198	.0	.0	1.0	1		88467
58- 88467			-.185	0.0	0.0	-.185	0.0	0.0		
59- CEAR	8470	8470	8210	8211	.0	.0	1.0	1		88470
60- 88470			-1.401	0.0	0.0	-1.401	0.0	0.0		
61- CEAR	8471	8470	8211	8212	.0	.0	1.0	1		88471
62- 88471			-1.401	0.0	0.0	-1.401	0.0	0.0		
63- CEAR	8472	8470	8212	8213	.0	.0	1.0	1		88472
64- 88472			-1.401	0.0	0.0	-1.401	0.0	0.0		
65- CEAR	8473	8470	8213	8214	.0	.0	1.0	1		88473
66- 88473			-1.401	0.0	0.0	-1.401	0.0	0.0		
67- CEAR	8474	8470	8214	8215	.0	.0	1.0	1		88474
68- 88474			-1.401	0.0	0.0	-1.401	0.0	0.0		
69- CEAR	8475	8470	8215	8216	.0	.0	1.0	1		88475
70- 88475			-1.401	0.0	0.0	-1.401	0.0	0.0		
71- CEAR	8476	8470	8216	8217	.0	.0	1.0	1		88476
72- 88476			-1.401	0.0	0.0	-1.401	0.0	0.0		
73- CEAR	8477	8470	8217	8218	.0	.0	1.0	1		88477
74- 88477			-1.401	0.0	0.0	-1.401	0.0	0.0		
75- CEAR	8480	8480	8230	8231	.0	.0	1.0	1		88480
76- 88480			-.1850	0.0	0.0	-.1850	0.0	0.0		
77- CEAR	8481	8480	8231	8232	.0	.0	1.0	1		88481
78- 88481			-.1850	0.0	0.0	-.1850	0.0	0.0		
79- CEAR	8482	8480	8232	8233	.0	.0	1.0	1		88482
80- 88482			-.1850	0.0	0.0	-.1850	0.0	0.0		
81- CEAR	8483	8480	8233	8234	.0	.0	1.0	1		88483
82- 88483			-.1850	0.0	0.0	-.1850	0.0	0.0		
83- CEAR	8484	8480	8234	8235	.0	.0	1.0	1		88484
84- 88484			-.1850	0.0	0.0	-.1850	0.0	0.0		
85- CEAR	8485	8480	8235	8236	.0	.0	1.0	1		88485
86- 88485			-.1850	0.0	0.0	-.1850	0.0	0.0		
87- CEAR	8486	8480	8236	8237	.0	.0	1.0	1		88486
88- 88486			-.1850	0.0	0.0	-.1850	0.0	0.0		
89- CEAR	8487	8480	8237	8238	.0	.0	1.0	1		88487
90- 88487			-.1850	0.0	0.0	-.1850	0.0	0.0		
91- CEAR	8490	8490	8250	8251	.0	.0	1.0	1		88490
92- 88490			-.1850	0.0	0.0	-.1850	0.0	0.0		
93- CEAR	8491	8490	8251	8252	.0	.0	1.0	1		88491
94- 88491			-.1850	0.0	0.0	-.1850	0.0	0.0		
95- CEAR	8492	8490	8252	8253	.0	.0	1.0	1		88492
96- 88492			-.1850	0.0	0.0	-.1850	0.0	0.0		
97- CEAR	8493	8490	8253	8254	.0	.0	1.0	1		88493
98- 88493			-.1850	0.0	0.0	-.1850	0.0	0.0		
99- CEAR	8494	8490	8254	8255	.0	.0	1.0	1		88494
100- 88494			-.1850	0.0	0.0	-.1850	0.0	0.0		

S O R T E D B U L K D A T A E C H O

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
101-CBAR	8495	8490	8255	8256	.0	.0	1.0	1		88495
102-88495			-.1850	0.0	0.0	-.1850	0.0	0.0		
103-CBAR	8496	8490	8256	8257	.0	.0	1.0	1		88496
104-88496			-.1850	0.0	0.0	-.1850	0.0	0.0		
105-CBAR	8497	8490	8257	8258	.0	.0	1.0	1		88497
106-88497			-.1850	0.0	0.0	-.1850	0.0	0.0		
107-CBAR	8500	8500	8270	8271	.0	.0	1.0	1		88500
108-88500			-.1850	0.0	0.0	-.1850	0.0	0.0		
109-CBAR	8501	8500	8271	8272	.0	.0	1.0	1		88501
110-88501			-.1850	0.0	0.0	-.1850	0.0	0.0		
111-CBAR	8502	8500	8272	8273	.0	.0	1.0	1		88502
112-88502			-.1850	0.0	0.0	-.1850	0.0	0.0		
113-CBAR	8503	8500	8273	8274	.0	.0	1.0	1		88503
114-88503			-.1850	0.0	0.0	-.1850	0.0	0.0		
115-CBAR	8504	8500	8274	8275	.0	.0	1.0	1		88504
116-88504			-.185	0.0	0.0	-.185	0.0	0.0		
117-CBAR	8505	8500	8275	8276	.0	.0	1.0	1		88505
118-88505			-.185	0.0	0.0	-.185	0.0	0.0		
119-CBAR	8506	8500	8276	8277	.0	.0	1.0	1		88506
120-88506			-.185	0.0	0.0	-.185	0.0	0.0		
121-CBAR	8507	8500	8277	8278	.0	.0	1.0	1		88507
122-88507			-.185	0.0	0.0	-.185	0.0	0.0		
123-CBAR	8510	8510	8290	8291	.0	.0	1.0	1		88510
124-88510			-1.401	0.0	0.0	-1.401	0.0	0.0		
125-CBAR	8511	8510	8291	8292	.0	.0	1.0	1		88511
126-88511			-1.401	0.0	0.0	-1.401	0.0	0.0		
127-CBAR	8512	8510	8292	8293	.0	.0	1.0	1		88512
128-88512			-1.401	0.0	0.0	-1.401	0.0	0.0		
129-CBAR	8513	8510	8293	8294	.0	.0	1.0	1		88513
130-88513			-1.4010	0.0	0.0	-1.401	0.0	0.0		
131-CBAR	8514	8510	8294	8295	.0	.0	1.0	1		88514
132-88514			-1.401	0.0	0.0	-1.4010	0.0	0.0		
133-CBAR	8515	8510	8295	8296	.0	.0	1.0	1		88515
134-88515			-1.401	0.0	0.0	-1.401	0.0	0.0		
135-CBAR	8516	8510	8296	8297	.0	.0	1.0	1		88516
136-88516			-1.401	0.0	0.0	-1.401	0.0	0.0		
137-CBAR	8517	8510	8297	8298	.0	.0	1.0	1		88517
138-88517			-1.401	0.0	0.0	-1.401	0.0	0.0		
139-CBAR	8520	8520	8310	8311	.0	.0	1.0	1		88520
140-88520			-.1850	0.0	0.0	-.1850	0.0	0.0		
141-CBAR	8521	8520	8311	8312	.0	.0	1.0	1		88521
142-88521			-.1850	0.0	0.0	-.1850	0.0	0.0		
143-CBAR	8522	8520	8312	8313	.0	.0	1.0	1		88522
144-88522			-.1850	0.0	0.0	-.1850	0.0	0.0		
145-CBAR	8523	8520	8313	8314	.0	.0	1.0	1		88523
146-88523			-.1850	0.0	0.0	-.1850	0.0	0.0		
147-CBAR	8524	8520	8314	8315	.0	.0	1.0	1		88524
148-88524			-.1850	0.0	0.0	-.1850	0.0	0.0		
149-CBAR	8525	8520	8315	8316	.0	.0	1.0	1		88525
150-88525			-.1850	0.0	0.0	-.1850	0.0	0.0		

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CARD COUNT	1	2	3	4	5	6	7	8	9	10
151- CBAR	8526	8526	8316	8317	.0	.0	1.0	1		88526
152- 88526			-.1850	0.0	0.0	-.1850	0.0	0.0		
153- CBAR	8527	8520	8317	8318	.0	.0	1.0	1		88527
154- 88527			-.1850	0.0	0.0	-.1850	0.0	0.0		
155- CBAR	8530	8531	8330	8331	.0	.0	1.0	1		88530
156- 88530			-1.401	0.0	0.0	-1.401	0.0	0.0		
157- CBAR	8531	8531	8331	8332	.0	.0	1.0	1		88531
158- 88531			-1.401	0.0	0.0	-1.401	0.0	0.0		
159- CBAR	8532	8530	8332	8333	.0	.0	1.0	1		88532
160- 88532			-1.401	0.0	0.0	-1.401	0.0	0.0		
161- CBAR	8533	8531	8333	8334	.0	.0	1.0	1		88533
162- 88533			-1.401	0.0	0.0	-1.401	0.0	0.0		
163- CBAR	8534	8531	8334	8335	.0	.0	1.0	1		88534
164- 88534			-1.401	0.0	0.0	-1.401	0.0	0.0		
165- CBAR	8535	8530	8335	8336	.0	.0	1.0	1		88535
166- 88535			-1.4010	0.0	0.0	-1.401	0.0	0.0		
167- CBAR	8536	8530	8336	8337	.0	.0	1.0	1		88536
168- 88536			-1.401	0.0	0.0	-1.4010	0.0	0.0		
169- CBAR	8537	8530	8337	8338	.0	.0	1.0	1		88537
170- 88537			-1.401	0.0	0.0	-1.401	0.0	0.0		
171- CBAR	8538	8530	8338	8339	.0	.0	1.0	1		88538
172- 88538			-1.401	0.0	0.0	-1.401	0.0	0.0		
173- CBAR	8539	8530	8339	8340	.0	.0	1.0	1		88539
174- 88539			-1.401	0.0	0.0	-1.401	0.0	0.0		
175- CBAR	8540	8540	8370	8371	.0	.0	1.0	1		88540
176- 88540			-.393	0.0	0.0	-.393	0.0	0.0		
177- CBAR	8541	8540	8371	8372	.0	.0	1.0	1		88541
178- 88541			-.393	0.0	0.0	-.393	0.0	0.0		
179- CBAR	8542	8540	8372	8373	.0	.0	1.0	1		88542
180- 88542			-.393	0.0	0.0	-.393	0.0	0.0		
181- CBAR	8543	8540	8373	8374	.0	.0	1.0	1		88543
182- 88543			-.393	0.0	0.0	-.393	0.0	0.0		
183- CBAR	8544	8540	8374	8375	.0	.0	1.0	1		88544
184- 88544			-.393	0.0	0.0	-.393	0.0	0.0		
185- CBAR	8545	8540	8375	8376	.0	.0	1.0	1		88545
186- 88545			-.393	0.0	0.0	-.393	0.0	0.0		
187- CBAR	8546	8540	8376	8377	.0	.0	1.0	1		88546
188- 88546			-.393	0.0	0.0	-.393	0.0	0.0		
189- CBAR	8547	8540	8377	8378	.0	.0	1.0	1		88547
190- 88547			-.393	0.0	0.0	-.393	0.0	0.0		
191- CBAR	8550	8550	8350	8351	.0	.0	1.0	1		88550
192- 88550			-1.401	0.0	0.0	-1.401	0.0	0.0		
193- CBAR	8551	8550	8351	8352	.0	.0	1.0	1		88551
194- 88551			-1.4010	0.0	0.0	0.0	1.2194	-0.6899		
195- CBAR	8552	8550	8352	8353	1.0	.0	.0	1		88552
196- 88552			0.0	1.2194	-0.6899	-1.4010	0.0	0.0		
197- CBAR	8553	8550	8353	8354	.0	.0	1.0	1		88553
198- 88553			-1.401	0.0	0.0	-1.401	0.0	0.0		
199- CBAR	8554	8550	8354	8355	.0	.0	1.0	1		88554
200- 88554			-1.4010	0.0	0.0	0.0	1.2194	0.6899		

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
201-CBAR	8555	8550	8355	8356	1.0	.0	.0	1	68555	
202-68555			0.0	1.2194	0.6899	-1.4010	0.0	0.0		
203-CBAR	8556	8550	8356	8357	.0	.0	1.0	1	68556	
204-68556			-1.401	0.0	0.0	-1.401	0.0	0.0		
205-CBAR	8557	8550	8357	8358	.0	.0	1.0	1	68557	
206-68557			-1.401	0.0	0.0	-1.401	0.0	0.0		
207-CBAR	8700	8400	5117	5118	.0	.0	1.0	1	68400	
208-68400			-.393	0.0	0.0	-.393	0.0	0.0		
209-CBAR	8701	8400	5118	5119	.0	.0	1.0	1	68401	
210-68401			-.393	0.0	0.0	-.393	0.0	0.0		
211-CBAR	8702	8400	5119	5120	.0	.0	1.0	1	68402	
212-68402			-.393	0.0	0.0	-.393	0.0	0.0		
213-CBAR	8703	8400	5120	5126	.0	.0	1.0	1	68403	
214-68403			-.393	0.0	0.0	-.393	0.0	0.0		
215-CBAR	8704	8400	5126	5121	.0	.0	1.0	1	68404	
216-68404			-.393	0.0	0.0	-.393	0.0	0.0		
217-CBAR	8705	8400	5121	5122	.0	.0	1.0	1	68405	
218-68405			-.393	0.0	0.0	-.393	0.0	0.0		
219-CBAR	8706	8400	5122	5123	.0	.0	1.0	1	68406	
220-68406			-.393	0.0	0.0	-.393	0.0	0.0		
221-CBAR	8707	8400	5123	5124	.0	.0	1.0	1	68407	
222-68407			-.393	0.0	0.0	-.393	0.0	0.0		
223-CBAR	8708	8400	5124	5125	.0	.0	1.0	1	68408	
224-68408			-.393	0.0	0.0	-.393	0.0	0.0		
225-CBAR	8710	8410	8110	8111	.0	.0	1.0	1	68410	
226-68410			-.185	0.0	0.0	-.185	0.0	0.0		
227-CBAR	8711	8410	8111	8112	.0	.0	1.0	1	68411	
228-68411			-.185	0.0	0.0	-.185	0.0	0.0		
229-CBAR	8712	8410	8112	8113	.0	.0	1.0	1	68412	
230-68412			-.185	0.0	0.0	-.185	0.0	0.0		
231-CBAR	8713	8410	8113	8114	.0	.0	1.0	1	68413	
232-68413			-.185	0.0	0.0	-.185	0.0	0.0		
233-CBAR	8714	8410	8114	8115	.0	.0	1.0	1	68414	
234-68414			-.185	0.0	0.0	-.185	0.0	0.0		
235-CBAR	8715	8410	8115	8116	.0	.0	1.0	1	68415	
236-68415			-.185	0.0	0.0	-.185	0.0	0.0		
237-CBAR	8716	8410	8116	8117	.0	.0	1.0	1	68416	
238-68416			-.185	0.0	0.0	-.185	0.0	0.0		
239-CBAR	8717	8410	8117	8118	.0	.0	1.0	1	68417	
240-68417			-.185	0.0	0.0	-.185	0.0	0.0		
241-CBAR	8718	8410	8118	8119	.0	.0	1.0	1	68418	
242-68418			-.185	0.0	0.0	-.185	0.0	0.0		
243-CBAR	8720	8420	8130	8131	.0	.0	1.0	1	68420	
244-68420			-1.401	0.0	0.0	-1.401	0.0	0.0		
245-CBAR	8721	8420	8131	8132	.0	.0	1.0	1	68421	
246-68421			-1.401	0.0	0.0	-1.401	0.0	0.0		
247-CBAR	8722	8420	8132	8133	.0	.0	1.0	1	68422	
248-68422			-1.401	0.0	0.0	-1.401	0.0	0.0		
249-CBAR	8723	8420	8133	8134	.0	.0	1.0	1	68423	
250-68423			-1.4010	0.0	0.0	1.401	0.0	0.0		

EXTERNAL TANK W. FLUID  
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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
251- CBAR	8724	8420	8134	8135	.0	.0	.0	1.0	1		88424
252- 88424			1.401	0.0	0.0	-1.4010	0.0	0.0			
253- CBAR	8725	8420	8135	8136	.0	.0	.0	1.0	1		88425
254- 88425			-1.401	0.0	0.0	-1.401	0.0	0.0			
255- CBAR	8726	8420	8136	8137	.0	.0	.0	1.0	1		88426
256- 88426			-1.401	0.0	0.0	-1.401	0.0	0.0			
257- CBAR	8727	8420	8137	8138	.0	.0	.0	1.0	1		88427
258- 88427			-1.401	0.0	0.0	-1.401	0.0	0.0			
259- CBAR	8728	8420	8138	8139	.0	.0	.0	1.0	1		88428
260- 88428			-1.401	0.0	0.0	-1.401	0.0	0.0			
261- CBAR	8730	8430	8150	8151	.0	.0	.0	1.0	1		88430
262- 88430			-1.401	0.0	0.0	-1.401	0.0	0.0			
263- CBAR	8731	8430	8151	8152	.0	.0	.0	1.0	1		88431
264- 88431			-1.401	0.0	0.0	-1.401	0.0	0.0			
265- CBAR	8732	8430	8152	8153	.0	.0	.0	1.0	1		88432
266- 88432			-1.401	0.0	0.0	-1.401	0.0	0.0			
267- CBAR	8733	8430	8153	8154	.0	.0	.0	1.0	1		88433
268- 88433			-1.401	0.0	0.0	-1.401	0.0	0.0			
269- CBAR	8734	8430	8154	8155	.0	.0	.0	1.0	1		88434
270- 88434			-1.401	0.0	0.0	-1.401	0.0	0.0			
271- CBAR	8735	8430	8155	8156	.0	.0	.0	1.0	1		88435
272- 88435			-1.401	0.0	0.0	-1.401	0.0	0.0			
273- CBAR	8736	8430	8156	8157	.0	.0	.0	1.0	1		88436
274- 88436			-1.401	0.0	0.0	-1.401	0.0	0.0			
275- CBAR	8737	8430	8157	8158	.0	.0	.0	1.0	1		88437
276- 88437			-1.401	0.0	0.0	-1.401	0.0	0.0			
277- CBAR	8738	8430	8158	8159	.0	.0	.0	1.0	1		88438
278- 88438			-1.401	0.0	0.0	-1.401	0.0	0.0			
279- CONM2	8750	8210	69	.001053							
280- CONM2	8751	8290	69	.000663							
281- CONM2	8752	8294	69	.000234							
282- CONM2	8753	8331	69	.001027							
283- CONM2	8754	8336	69	.00026							
284- CONM2	8755	8334	69	.000572							
285- CONM2	8756	8134	69	.001508							
286- CONM2	8757	8352	69	.000949							
287- CONM2	8758	8355	69	.000884							
288- CONM2	8759	8328	696	.000880							
289- CONROD	8600	8114	8600	.1125							
290- CONROD	8601	8114	8134	8600	.2475						
291- CONROD	8602	8134	8154	8600	.2475						
292- CONROD	8603	8154	8074	8600	.1125						
293- CONROD	8604	8075	8174	8600	.0640						
294- CONROD	8605	8174	8194	8600	.0384						
295- CONROD	8607	8073	8173	8600	.0800						
296- CONROD	8608	8173	8193	8600	.0768						
297- CONROD	8609	8193	8213	8600	.0458						
298- CONROD	8610	8213	8233	8600	.0458						
299- CONROD	8611	8233	8253	8600	.0458						
300- CONROD	8612	8253	8273	8600	.0458						

SORTED BULK DATA ECHO

CARD	COUNT .	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
301- CONROD	8613	8273	8293	8600	.0458						
302- CONFCO	8614	8293	8313	8600	.0458						
303- CONROD	8615	8313	8335	8600	.0458						
304- CONFOO	8616	8335	8373	8600	.0458						
305- CONFOO	8620	8134	8140	8600	.0870						
306- CONFOO	8621	8290	8294	8600	.2630						
307- CONFOO	8622	8294	8299	8600	.2630						
308- CONFOO	8623	8330	8336	8600	.2630						
309- CONROD	8624	8336	8341	8600	.2630						
310- CONFOO	8625	8352	8359	8600	.2630						
311- CONFOO	8626	8355	8360	8600	.2630						
312- CONFOO	8627	8328	8331	8600	.378						
313- CONFOO	8628	8328	8290	8600	.933						
314- CONFOO	8629	8329	8334	8500	.263						
315- CORC2C	69	0	-81.5683.0	35.5985	66.9096 .0				26.5170	869	
316- E69	68.25	0.0	48.432								
317- CORD2C	100	696	74.738	-30.494	6.138	200.0	-30.494	6.138	8CSSRM		
318- ECSSRM	74.738	0.0	0.0								
319- CORC2C	5001	0	-81.5683.0	35.5985	66.9096 .0				26.5170	8CD	
320- ECD	68.25	0.0	48.432								
321- CORC2C	5100	0	-81.5683.0	35.5985	66.9096 .0				26.5170	8C5100	
322- EC5100	68.25	0.0	48.432								
323- CORD2R	101	696	74.738	-30.494	6.138	74.738	-28.5701	15.6963	8RSSRM		
324- ERSSRM	200.	-30.494	6.138								
325- CORC2R	696	0	-81.5683.0	35.5985	-80.2278.0				57.5136	8696	
326- E696	68.25	0.0	48.432								
327- CORD2R	3001	0	-81.5683.0	35.5985	-80.2278.0				57.5136	8C3001	
328- EC3001	68.25	0.0	48.432								
329- CORC2R	3002	696	245.7536-16.4631	11.0003	245.7536-13.75				24.9514	8C3002	
330- EC3002	300.	-16.4631	11.0003								
331- CCFD2R	10000	0	-81.5683.0	35.5985	66.9096 .0				26.5170	8C10000	
332- EC10000	68.25	0.0	48.432								
333- CORC2S	10002	10000	0.0	0.0	32.14	0.0	0.0		33.14	8C10002	
334- EC10002	1.	0.	33.14								
335- CORC2S	10003	10000	0.0	0.0	37.65	0.0	0.0		38.65	8C10003	
336- EC10003	1.	0.	38.65								
337- CORC2S	10004	10000	0.0	0.0	44.12	0.0	0.0		45.12	8C10004	
338- EC10004	1.	0.	45.12								
339- CORC2S	10005	10000	0.0	0.0	52.52	0.0	0.0		53.52	8C10005	
340- EC10005	1.	0.	53.52								
341- CORC2S	10006	10000	0.0	0.0	58.68	0.0	0.0		59.68	8C10006	
342- EC10006	1.	0.	59.68								
343- CORC2S	10010	10000	0.0	0.0	81.19	0.0	0.0		82.19	8C10010	
344- EC10010	1.	0.	82.19								
345- CORD2S	10011	10000	0.0	0.0	79.13	0.0	0.0		80.13	8C10011	
346- EC10011	1.	0.	80.13								
347- CORC2S	10012	10000	0.0	0.0	76.08	0.0	0.0		77.08	8C10012	
348- EC10012	1.	0.	77.08								
349- CORC2S	10013	10000	0.0	0.0	76.87	0.0	0.0		77.87	8C10013	
350- EC10013	1.	0.	77.87								

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
351- CORD2S	10014	10000	0.0	0.0	73.78	0.0	0.0	74.78	6C10014		
352- 6C10014	1.	0.	74.78								
353- CORD2S	10015	10000	0.0	0.0	77.08	0.0	0.0	78.08	6C10015		
354- 6C10015	1.	0.	78.08								
355- CORD2S	10016	10000	0.0	0.0	83.94	0.0	0.0	84.94	6C10016		
356- 6C10016	1.	0.	84.94								
357- CORD2S	20014	10000	0.0	0.0	255.71	0.0	0.0	256.71	6C20014		
358- 6C20014	1.	0.	256.71								
359- CORD2S	20015	10000	0.0	0.0	244.69	0.0	0.0	245.69	6C20015		
360- 6C20015	1.	0.	245.69								
361- CORD2S	20016	10000	0.0	0.0	248.21	0.0	0.0	249.21	6C20016		
362- 6C20016	1.	0.	249.21								
363- CORD2S	20017	10000	0.0	0.0	248.52	0.0	0.0	249.52	6C20017		
364- 6C20017	1.	0.	249.52								
365- CQUAD2	5005	5005	5013	5014	5027	5026					
366- CQUAD2	5010	5009	5014	5015	5028	5027					
367- CQUAD2	5011	5005	5015	5016	5029	5028					
368- CQUAD2	5012	5009	5016	5017	5030	5029					
369- CQUAD2	5013	5009	5017	5018	5031	5030					
370- CQUAD2	5014	5009	5018	5019	5032	5031					
371- CQUAD2	5015	5009	5019	5020	5033	5032					
372- CQUAD2	5016	5009	5020	5021	5034	5033					
373- CQUAD2	5017	5009	5026	5027	5040	5039					
374- CQUAD2	5018	5009	5027	5028	5041	5040					
375- CQUAD2	5019	5005	5028	5029	5042	5041					
376- CQUAD2	5020	5009	5029	5030	5043	5042					
377- CQUAD2	5021	5005	5030	5031	5044	5043					
378- CQUAD2	5022	5009	5031	5032	5045	5044					
379- CQUAD2	5023	5009	5032	5033	5046	5045					
380- CQUAD2	5024	5009	5033	5034	5047	5046					
381- CQUAD2	5025	5009	5039	5040	5053	5052					
382- CQUAD2	5026	5009	5040	5041	5054	5053					
383- CQUAD2	5027	5009	5041	5042	5055	5054					
384- CQUAD2	5028	5005	5042	5043	5056	5055					
385- CQUAD2	5029	5005	5043	5044	5057	5056					
386- CQUAD2	5030	5009	5044	5045	5058	5057					
387- CQUAD2	5031	5005	5045	5046	5059	5058					
388- CQUAD2	5032	5009	5046	5047	5060	5059					
389- CQUAD2	5033	5009	5052	5053	5066	5065					
390- CQUAD2	5034	5009	5053	5054	5067	5066					
391- CQUAD2	5035	5009	5054	5055	5068	5067					
392- CQUAD2	5036	5009	5055	5056	5069	5068					
393- CQUAD2	5037	5005	5056	5057	5070	5069					
394- CQUAD2	5038	5005	5057	5058	5071	5070					
395- CQUAD2	5039	5005	5058	5059	5072	5071					
396- CQUAD2	5040	5009	5059	5060	5073	5072					
397- CQUAD2	5041	5005	5065	5066	5079	5078					
398- CQUAD2	5042	5005	5066	5067	5080	5079					
399- CQUAD2	5043	5005	5067	5068	5081	5080					
400- CQUAD2	5044	5009	5068	5069	5082	5081					

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

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SORTED BULK DATA ECHO

CARD	COUNT .	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
401-	CQUAD2	5045		5009		5069		5070		5083		5082									
402-	CQUAD2	5046		5009		5070		5071		5084		5083									
403-	CQUAD2	5047		5009		5071		5072		5085		5084									
404-	CQUAD2	5048		5009		5072		5073		5086		5085									
405-	CQUAD2	5049		5009		5078		5079		5092		5091									
406-	CQUAD2	5050		5009		5079		5080		5093		5092									
407-	CQUAD2	5051		5009		5080		5081		5094		5093									
409-	CQUAD2	5052		5009		5081		5082		5095		5094									
409-	CQUAD2	5053		5009		5082		5083		5096		5095									
410-	CQUAD2	5054		5009		5083		5084		5097		5096									
411-	CQUAD2	5055		5009		5084		5085		5098		5097									
412-	CQUAD2	5056		5009		5085		5086		5099		5098									
413-	CQUAD2	5057		5009		5091		5092		5105		5104									
414-	CQUAD2	5058		5009		5092		5093		5106		5105									
415-	CQUAD2	5059		5009		5093		5094		5107		5106									
415-	CQUAD2	5060		5009		5094		5095		5108		5107									
417-	CQUAD2	5061		5009		5095		5096		5109		5108									
418-	CQUAD2	5062		5009		5096		5097		5110		5109									
419-	CQUAD2	5063		5009		5097		5098		5111		5110									
420-	CQUAD2	5064		5009		5098		5099		5112		5111									
421-	CQUAD2	5065		5009		5104		5105		5118		5117									
422-	CQUAD2	5066		5009		5105		5106		5119		5118									
423-	CQUAD2	5067		5009		5106		5107		5120		5119									
424-	CQUAD2	5068		5009		5107		5108		5121		5120									
425-	CQUAD2	5069		5009		5108		5109		5122		5121									
426-	CQUAD2	5070		5009		5109		5110		5123		5122									
427-	CQUAD2	5071		5009		5110		5111		5124		5123									
428-	CQUAD2	5072		5009		5111		5112		5125		5124									
429-	CQUAD2	5073		5073		5117		5118		5131		5130									
430-	CQUAD2	5074		5073		5118		5119		5132		5131									
431-	CQUAD2	5075		5073		5119		5120		5133		5132									
432-	CQUAD2	5076		5073		5120		5121		5134		5133									
433-	CQUAD2	5077		5073		5121		5122		5135		5134									
434-	CQUAD2	5078		5073		5122		5123		5136		5135									
435-	CQUAD2	5079		5073		5123		5124		5137		5136									
436-	CQUAD2	5080		5073		5124		5125		5138		5137									
437-	CQUAD2	5081		5073		5130		5131		5144		5143									
439-	CQUAD2	5082		5073		5131		5132		5145		5144									
439-	CQUAD2	5083		5073		5132		5133		5146		5145									
440-	CQUAD2	5084		5073		5133		5134		5147		5146									
441-	CQUAD2	5085		5073		5134		5135		5148		5147									
442-	CQUAD2	5086		5073		5135		5136		5149		5148									
443-	CQUAD2	5087		5073		5136		5137		5150		5149									
444-	CQUAD2	5088		5073		5137		5138		5151		5150									
445-	CQUAD2	5089		5073		5143		5144		5157		5156									
446-	CQUAD2	5090		5073		5144		5145		5158		5157									
447-	CQUAD2	5091		5073		5145		5146		5159		5158									
448-	CQUAD2	5092		5073		5146		5147		5160		5159									
449-	CQUAD2	5093		5073		5147		5148		5161		5160									
450-	CQUAD2	5094		5073		5148		5149		5162		5161									



SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
451-	CQUAD2	5095	5073	5149	5150	5163	5162				
452-	CQUAD2	5096	5073	5150	5151	5164	5163				
453-	CQUAD2	5097	5073	5156	5157	5170	5169				
454-	CQUAD2	5098	5073	5157	5158	5171	5170				
455-	CQUAD2	5099	5073	5158	5159	5172	5171				
456-	CQUAD2	5100	5073	5159	5160	5173	5172				
457-	CQUAD2	5101	5072	5160	5161	5174	5173				
458-	CQUAD2	5102	5073	5161	5162	5175	5174				
459-	CQUAD2	5103	5073	5162	5163	5176	5175				
460-	CQUAD2	5104	5073	5163	5164	5177	5176				
461-	CQUAD2	5105	5073	5169	5170	5183	5182				
462-	CQUAD2	5106	5073	5170	5171	5184	5183				
463-	CQUAD2	5107	5073	5171	5172	5185	5184				
464-	CQUAD2	5108	5073	5172	5173	5186	5185				
465-	CQUAD2	5109	5073	5173	5174	5187	5186				
466-	CQUAD2	5110	5073	5174	5175	5188	5187				
467-	CQUAD2	5111	5073	5175	5176	5189	5188				
468-	CQUAD2	5112	5073	5176	5177	5190	5189				
469-	CQUAD2	5113	5113	5183	5196	5195	5182				
470-	CQUAD2	5114	5113	5184	5197	5196	5183				
471-	CQUAD2	5115	5113	5185	5198	5197	5184				
472-	CQUAD2	5116	5113	5186	5199	5198	5185				
473-	CQUAD2	5117	5113	5187	5200	5199	5186				
474-	CQUAD2	5118	5113	5188	5201	5200	5187				
475-	CQUAD2	5119	5113	5189	5202	5201	5188				
476-	CQUAD2	5120	5113	5190	5203	5202	5189				
477-	CQUAD2	8010	8010	8010	8011	8031	8030				
478-	CQUAD2	8011	8010	8011	8012	8032	8031				
479-	CQUAD2	8012	8010	8012	8013	8033	8032				
480-	CQUAD2	8013	8010	8013	8014	8034	8033				
481-	CQUAD2	8014	8010	8014	8015	8035	8034				
482-	CQUAD2	8015	8010	8015	8016	8036	8035				
483-	CQUAD2	8016	8010	8016	8017	8037	8036				
484-	CQUAD2	8017	8010	8017	8018	8038	8037				
485-	CQUAD2	8030	8010	8030	8031	8051	8050				
486-	CQUAD2	8031	8010	8031	8032	8052	8051				
487-	CQUAD2	8032	8010	8032	8033	8053	8052				
488-	CQUAD2	8033	8010	8033	8034	8054	8053				
489-	CQUAD2	8034	8010	8034	8035	8055	8054				
490-	CQUAD2	8035	8010	8035	8036	8056	8055				
491-	CQUAD2	8036	8010	8036	8037	8057	8056				
492-	CQUAD2	8037	8010	8037	8038	8058	8057				
493-	CQUAD2	8050	8010	8050	8051	8071	8070				
494-	CQUAD2	8051	8010	8051	8052	8072	8071				
495-	CQUAD2	8052	8010	8052	8053	8073	8072				
496-	CQUAD2	8053	8010	8053	8054	8075	8073				
497-	CQUAD2	8054	8010	8054	8055	8076	8075				
498-	CQUAD2	8055	8010	8055	8056	8077	8076				
499-	CQUAD2	8056	8010	8056	8057	8078	8077				
500-	CQUAD2	8057	8010	8057	8058	8079	8078				

EXTERNAL TANK W. FLUID  
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S O R T E D B U L K D A T A E C H O

CARD COUNT .	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
501-	CQUAD2		8070		8150		5117		5118		8111		8110							
502-	CQUAD2		8071		8150		5118		5119		8112		8111							
503-	CQUAD2		8072		8072		5119		5120		8113		8112							
504-	CQUAD2		8073		8072		5120		5126		8114		8113							
505-	CQUAD2		8074		8072		5126		5121		8115		8114							
506-	CQUAD2		8075		8072		5121		5122		8116		8115							
507-	CQUAD2		8076		8150		5122		5123		8117		8116							
508-	CQUAD2		8077		8150		5123		5124		8118		8117							
509-	CQUAD2		8078		8150		5124		5125		8119		8118							
510-	CQUAD2		8090		8150		8110		8111		8131		8130							
511-	CQUAD2		8091		8150		8111		8112		8132		8131							
512-	CQUAD2		8092		8092		8112		8113		8133		8132							
513-	CQUAD2		8093		8072		8113		8114		8134		8133							
514-	CQUAD2		8094		8072		8114		8115		8135		8134							
515-	CQUAD2		8095		8092		8115		8116		8136		8135							
516-	CQUAD2		8096		8150		8116		8117		8137		8136							
517-	CQUAD2		8097		8150		8117		8118		8138		8137							
518-	CQUAD2		8098		8150		8118		8119		8139		8138							
519-	CQUAD2		8110		8150		8130		8131		8151		8150							
520-	CQUAD2		8111		8150		8131		8132		8152		8151							
521-	CQUAD2		8112		8112		8132		8133		8153		8152							
522-	CQUAD2		8113		8072		8133		8134		8154		8153							
523-	CQUAD2		8114		8072		8134		8135		8155		8154							
524-	CQUAD2		8115		8112		8135		8136		8156		8155							
525-	CQUAD2		8116		8150		8136		8137		8157		8156							
526-	CQUAD2		8117		8150		8137		8138		8158		8157							
527-	CQUAD2		8118		8150		8138		8139		8159		8158							
528-	CQUAD2		8130		8150		8150		8151		8071		8070							
529-	CQUAD2		8131		8150		8151		8152		8072		8071							
530-	CQUAD2		8132		8112		8152		8153		8073		8072							
531-	CQUAD2		8133		8072		8153		8154		8074		8073							
532-	CQUAD2		8134		8072		8154		8155		8075		8074							
533-	CQUAD2		8135		8112		8155		8156		8076		8075							
534-	CQUAD2		8136		8150		8156		8157		8077		8076							
535-	CQUAD2		8137		8150		8157		8158		8078		8077							
536-	CQUAD2		8138		8150		8158		8159		8079		8078							
537-	CQUAD2		8150		8150		8070		8071		8171		8170							
538-	CQUAD2		8151		8150		8071		8072		8172		8171							
539-	CQUAD2		8152		8150		8072		8073		8173		8172							
540-	CQUAD2		8153		8153		8073		8075		8174		8173							
541-	CQUAD2		8154		8150		8075		8076		8175		8174							
542-	CQUAD2		8155		8150		8076		8077		8176		8175							
543-	CQUAD2		8156		8150		8077		8078		8177		8176							
544-	CQUAD2		8157		8150		8078		8079		8178		8177							
545-	CQUAD2		8170		8151		8170		8171		8191		8190							
546-	CQUAD2		8171		8151		8171		8172		8192		8191							
547-	CQUAD2		8172		8151		8172		8173		8193		8192							
548-	CQUAD2		8173		8151		8173		8174		8194		8193							
549-	CQUAD2		8174		8151		8174		8175		8195		8194							
550-	CQUAD2		8175		8151		8175		8176		8196		8195							

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD COUNT	1	2	3	4	5	6	7	8	9	10
551- CQUAD2	8176	8151	8176	8177	8197	8196				
552- CQUAD2	8177	8151	8177	8178	8198	8197				
553- CQUAD2	8190	8190	8190	8191	8211	8210				
554- CQUAD2	8191	8190	8191	8192	8212	8211				
555- CQUAD2	8192	8190	8192	8193	8213	8212				
556- CQUAD2	8193	8190	8193	8194	8214	8213				
557- CQUAD2	8194	8190	8194	8195	8215	8214				
558- CQUAD2	8195	8190	8195	8196	8216	8215				
559- CQUAD2	8196	8151	8196	8197	8217	8216				
560- CQUAD2	8197	8151	8197	8198	8218	8217				
561- CQUAD2	8210	8190	8210	8211	8231	8230				
562- CQUAD2	8211	8190	8211	8212	8232	8231				
563- CQUAD2	8212	8190	8212	8213	8233	8232				
564- CQUAD2	8213	8190	8213	8214	8234	8233				
565- CQUAD2	8214	8190	8214	8215	8235	8234				
566- CQUAD2	8215	8190	8215	8216	8236	8235				
567- CQUAD2	8216	8190	8216	8217	8237	8236				
568- CQUAD2	8217	8190	8217	8218	8238	8237				
569- CQUAD2	8230	8230	8230	8231	8251	8250				
570- CQUAD2	8231	8190	8231	8232	8252	8251				
571- CQUAD2	8232	8190	8232	8233	8253	8252				
572- CQUAD2	8233	8190	8233	8234	8254	8253				
573- CQUAD2	8234	8190	8234	8235	8255	8254				
574- CQUAD2	8235	8190	8235	8236	8256	8255				
575- CQUAD2	8236	8190	8236	8237	8257	8256				
576- CQUAD2	8237	8190	8237	8238	8258	8257				
577- CQUAD2	8250	8151	8250	8251	8271	8270				
578- CQUAD2	8251	8011	8251	8252	8272	8271				
579- CQUAD2	8252	8190	8252	8253	8273	8272				
580- CQUAD2	8253	8190	8253	8254	8274	8273				
581- CQUAD2	8254	8190	8254	8255	8275	8274				
582- CQUAD2	8255	8190	8255	8256	8276	8275				
583- CQUAD2	8256	8190	8256	8257	8277	8276				
584- CQUAD2	8257	8190	8257	8258	8278	8277				
585- CQUAD2	8270	8151	8270	8271	8291	8290				
586- CQUAD2	8271	8151	8271	8272	8292	8291				
587- CQUAD2	8272	8190	8272	8273	8293	8292				
588- CQUAD2	8273	8190	8273	8274	8294	8293				
589- CQUAD2	8274	8190	8274	8275	8295	8294				
590- CQUAD2	8275	8190	8275	8276	8296	8295				
591- CQUAD2	8276	8190	8276	8277	8297	8296				
592- CQUAD2	8277	8190	8277	8278	8298	8297				
593- CQUAD2	8290	8151	8290	8291	8311	8310				
594- CQUAD2	8291	8151	8291	8292	8312	8311				
595- CQUAD2	8292	8230	8292	8293	8313	8312				
596- CQUAD2	8293	8190	8293	8294	8314	8313				
597- CQUAD2	8294	8190	8294	8295	8315	8314				
598- CQUAD2	8295	8190	8295	8296	8316	8315				
599- CQUAD2	8296	8190	8296	8297	8317	8316				
600- CQUAD2	8297	8190	8297	8298	8318	8317				

SORTED BULK DATA ECHO

CARD	COUNT .	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
601-	CQUAD2	8310		8151		8310		8311		8332		8330									
602-	CQUAD2	8311		8151		8311		8312		8333		8332									
603-	CQUAD2	8312		8151		8312		8313		8335		8333									
604-	CQUAD2	8313		8190		8313		8314		8336		8335									
605-	CQUAD2	8314		8190		8314		8315		8337		8336									
606-	CQUAD2	8315		8190		8315		8316		8338		8337									
607-	CQUAD2	8316		8190		8316		8317		8339		8338									
608-	CQUAD2	8317		8190		8317		8318		8340		8339									
609-	CQUAD2	8330		8330		8330		8332		8371		8370									
610-	CQUAD2	8331		8011		8332		8333		8372		8371									
611-	CQUAD2	8332		8151		8333		8335		8373		8372									
612-	CQUAD2	8333		8011		8335		8336		8374		8373									
613-	CQUAD2	8334		8011		8336		8337		8375		8374									
614-	CQUAD2	8335		8011		8337		8338		8376		8375									
615-	CQUAD2	8336		8011		8338		8339		8377		8376									
616-	CQUAD2	8337		8011		8339		8340		8378		8377									
617-	CQUAD2	8350		8010		8370		8371		8351		8350									
618-	CQUAD2	8351		8010		8371		8372		8352		8351									
619-	CQUAD2	8352		8010		8372		8373		8353		8352									
620-	CQUAD2	8353		8010		8373		8374		8354		8353									
621-	CQUAD2	8354		8010		8374		8375		8355		8354									
622-	CQUAD2	8355		8010		8375		8376		8356		8355									
623-	CQUAD2	8356		8010		8376		8377		8357		8356									
624-	CQUAD2	8357		8010		8377		8378		8358		8357									
625-	CQUAD2	8370		8011		8370		8371		8391		8390									
626-	CQUAD2	8371		8011		8371		8372		8392		8391									
627-	CQUAD2	8372		8011		8372		8373		8393		8392									
628-	CQUAD2	8373		8011		8373		8374		8394		8393									
629-	CQUAD2	8374		8011		8374		8375		8395		8394									
630-	CQUAD2	8375		8011		8375		8376		8396		8395									
631-	CQUAD2	8376		8011		8376		8377		8397		8396									
632-	CQUAD2	8377		8011		8377		8378		8398		8397									
633-	CQUAD2	8390		8011		8390		8391		8411		8410									
634-	CQUAD2	8391		8011		8391		8392		8412		8411									
635-	CQUAD2	8392		8011		8392		8393		8413		8412									
636-	CQUAD2	8393		8011		8393		8394		8414		8413									
637-	CQUAD2	8394		8011		8394		8395		8415		8414									
638-	CQUAD2	8395		8011		8395		8396		8416		8415									
639-	CQUAD2	8396		8011		8396		8397		8417		8416									
640-	CQUAD2	8397		8011		8397		8398		8418		8417									
641-	CQUAD2	8410		8011		8410		8411		8431		8430									
642-	CQUAD2	8411		8011		8411		8412		8432		8431									
643-	CQUAD2	8412		8011		8412		8413		8433		8432									
644-	CQUAD2	8413		8011		8413		8414		8434		8433									
645-	CQUAD2	8414		8011		8414		8415		8435		8434									
646-	CQUAD2	8415		8011		8415		8416		8436		8435									
647-	CQUAD2	8416		8011		8416		8417		8437		8436									
648-	CQUAD2	8417		8011		8417		8418		8438		8437									
649-	CTRIA2	5001		5099		5001		5014		5013		.0									
650-	CTRIA2	5002		5099		5001		5015		5014		.0									

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

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SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
651-CTRIA2	5003	5099	5001	5016	5015	.0				
652-CTRIA2	5004	5099	5001	5017	5016	.0				
653-CTRIA2	5005	5099	5001	5018	5017	.0				
654-CTRIA2	5006	5099	5001	5019	5018	.0				
655-CTRIA2	5007	5099	5001	5020	5019	.0				
656-CTRIA2	5008	5099	5001	5021	5020	.0				
657-CTRIA2	5121	5113	5195	5196	5204	.0				
658-CTRIA2	5122	5113	5196	5197	5204	.0				
659-CTRIA2	5123	5113	5197	5198	5204	.0				
660-CTRIA2	5124	5113	5198	5199	5204	.0				
661-CTRIA2	5125	5113	5199	5200	5204	.0				
662-CTRIA2	5126	5113	5200	5201	5204	.0				
663-CTRIA2	5127	5113	5201	5202	5204	.0				
664-CTRIA2	5128	5113	5202	5203	5204	.0				
665-CTRIA2	8000	8000	8001	8010	8011					
666-CTRIA2	8001	8000	8001	8011	8012					
667-CTRIA2	8002	8000	8001	8012	8013					
668-CTRIA2	8003	8000	8001	8013	8014					
669-CTRIA2	8004	8000	8001	8014	8015					
670-CTRIA2	8005	8000	8001	8015	8016					
671-CTRIA2	8006	8000	8001	8016	8017					
672-CTRIA2	8007	8000	8001	8017	8018					
673-CTRIA2	8430	8001	8440	8430	8431					
674-CTRIA2	8431	8001	8440	8431	8432					
675-CTRIA2	8432	8001	8440	8432	8433					
676-CTRIA2	8433	8001	8440	8433	8434					
677-CTRIA2	8434	8001	8440	8434	8435					
678-CTRIA2	8435	8001	8440	8435	8436					
679-CTRIA2	8436	8001	8440	8436	8437					
680-CTRIA2	8437	8001	8440	8437	8438					
681-DMI	MFLC	0	1	1	2		128	128	6AMF	0
682-DMI	*MFLD		17		17		5.99750936E-01	*AMF		1
683-*AMF	1	-2.00188254E-07	9.75884973E-08	-5.13396152E-08	3.88051867E-01	*AMF				2
684-*AMF	2	-1.61232549E-07	1.17549632E-07	-5.61975853E-08	2.73521602E-01	*AMF				3
685-*AMF	3	-1.14348154E-07	7.33102752E-08	-4.70881218E-08	2.81060696E-01	*AMF				4
686-*AMF	4	-1.42914928E-07	7.40217274E-08	-5.23736681E-08	2.48964071E-01	*AMF				5
687-*AMF	5	-1.33812250E-07	6.31305852E-08	-4.09470395E-08	1.78872287E-01	*AMF				6
688-*AMF	6	-8.99059387E-08	5.90598255E-08	-3.76073608E-08	1.70158863E-01	*AMF				7
689-*AMF	7	-7.69544677E-08	5.57664528E-08	-3.03963326E-08	1.25778019E-01	*AMF				8
690-*AMF	8	-6.77578669E-08	4.87084257E-08	-2.04432240E-08	8.02373290E-02	*AMF				9
691-*AMF	9	-3.95034476E-08	2.57716586E-08	-1.42092311E-08	4.87715043E-02	*AMF				10
692-*AMF	10	-1.73071726E-08	1.70859380E-08	-1.37417686E-08	1.36823319E-02	*AMF				11
693-*AMF	11	-3.54229716E-09	4.92929786E-09	-3.41605655E-09		*AMF				12
694-DMI	*MFLD		18		17		-2.00188254E-07	*AMF		13
695-*AMF	13	2.03074455E-01	-1.03771868E-07	-5.79994719E-07	-1.69359168E-07	*AMF				14
696-*AMF	14	5.85623377E-02	-5.06929680E-08	-1.63680284E-07	-1.23502957E-07	*AMF				15
697-*AMF	15	2.36592293E-02	-2.29564669E-08	-6.31134753E-08	-1.32212961E-07	*AMF				16
698-*AMF	16	1.45253607E-02	-1.52536863E-08	-4.08075067E-08	-1.17985053E-07	*AMF				17
699-*AMF	17	8.21207836E-03	-8.59573746E-09	-2.34883863E-08	-8.54429913E-08	*AMF				18
700-*AMF	18	4.55071777E-03	-5.09775333E-09	-1.25631239E-08	-8.16531838E-08	*AMF				19

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
701-AMF	19	3.43131484E-03	-3.91749921E-09	-9.16277187E-09	-6.09181257E-08	AMF	20				
702-AMF	20	1.75850443E-03	-2.16631668E-09	-4.90957675E-09	-3.88552976E-08	AMF	21				
703-AMF	21	8.16636953E-04	-9.64622160E-10	-2.22985541E-09	-2.37181546E-08	AMF	22				
704-AMF	22	2.63829017E-04	-2.56703991E-10	-6.14105655E-10	-6.67433397E-09	AMF	23				
705-AMF	23	2.26127158E-05	-2.24502500E-11	-5.43918244E-11		AMF	24				
706-DMI	*MFLD	19	17	9.75884973E-08	AMF	25					
707-AMF	25	-1.03771868E-07	1.55854344E-01	-1.15481214E-07	9.95563596E-08	AMF	26				
708-AMF	26	-4.56361242E-08	2.67839059E-02	-3.43343309E-08	7.41083568E-08	AMF	27				
709-AMF	27	-2.14284306E-08	7.26161525E-03	-1.07126645E-08	7.69169901E-08	AMF	28				
710-AMF	28	-1.52052380E-08	3.14712757E-03	-5.45826850E-09	6.90058073E-08	AMF	29				
711-AMF	29	-8.97803432E-09	1.14565925E-03	-2.03802131E-09	4.98198318E-08	AMF	30				
712-AMF	30	-5.08254061E-09	4.90898499E-04	-8.98737307E-10	4.73786343E-08	AMF	31				
713-AMF	31	-3.91396071E-09	2.94663245E-04	-5.26582111E-10	3.50451401E-08	AMF	32				
714-AMF	32	-2.05156669E-09	1.02667414E-04	-1.93383767E-10	2.23691039E-08	AMF	33				
715-AMF	33	-9.66346336E-10	3.33310600E-05	-6.36112968E-11	1.36033513E-08	AMF	34				
716-AMF	34	-3.16631184E-10	5.08826543E-06	-6.61268696E-12	3.81682952E-09	AMF	35				
717-AMF	35	-2.75938994E-11	1.04769924E-07	-1.31680962E-13		AMF	36				
719-DMI	*MFLD	20	17	-5.13396152E-08	AMF	37					
719-AMF	37	-5.75994719E-07	-1.15481214E-07	1.19105399E-01	-6.44834586E-08	AMF	38				
720-AMF	38	-1.63347067E-07	-3.30284564E-08	1.17744915E-02	-4.84915432E-08	AMF	39				
721-AMF	39	-6.52957510E-08	-1.07332170E-08	2.18403735E-03	-5.07903053E-08	AMF	40				
722-AMF	40	-4.09190513E-08	-5.12167730E-09	6.56526769E-04	-4.52156534E-08	AMF	41				
723-AMF	41	-2.24923546E-08	-2.00829176E-09	1.58654642E-04	-3.25102754E-08	AMF	42				
724-AMF	42	-1.24569617E-08	-8.82239393E-10	5.15687861E-05	-3.09430703E-08	AMF	43				
725-AMF	43	-9.39070688E-09	-5.40196554E-10	2.42011592E-05	-2.28782575E-08	AMF	44				
726-AMF	44	-4.81293938E-09	-1.93700625E-10	5.27083921E-06	-1.45959262E-08	AMF	45				
727-AMF	45	-2.23567058E-09	-6.39418379E-11	1.05410618E-06	-8.87232687E-09	AMF	46				
729-AMF	46	-7.22054860E-10	-9.95774557E-12	4.73843684E-08	-2.48904386E-09	AMF	47				
729-AMF	47	-6.18866743E-11	-2.07032958E-13	1.70598827E-10		AMF	48				
730-DMI	*MFLD	21	17	3.88051867E-01	AMF	49					
731-AMF	49	-1.69359168E-07	9.95563596E-08	-6.44834586E-08	7.97734439E-01	AMF	50				
732-AMF	50	-3.25585518E-07	2.25224085E-07	-7.80268010E-08	5.09292722E-01	AMF	51				
733-AMF	51	-2.11528004E-07	1.32427658E-07	-8.07746119E-08	5.10307133E-01	AMF	52				
734-AMF	52	-2.58947580E-07	1.32755133E-07	-9.30457418E-08	4.48567867E-01	AMF	53				
735-AMF	53	-2.46874726E-07	1.13167744E-07	-7.32852072E-08	3.21601212E-01	AMF	54				
736-AMF	54	-1.61540040E-07	1.05943684E-07	-6.74574494E-08	3.05588245E-01	AMF	55				
737-AMF	55	-1.38202154E-07	1.00007298E-07	-5.45148637E-08	2.25656569E-01	AMF	56				
738-AMF	56	-1.21529581E-07	8.73375825E-08	-3.66608752E-08	1.43884778E-01	AMF	57				
739-AMF	57	-7.68240577E-08	4.61987852E-08	-2.54773553E-08	8.74247551E-02	AMF	58				
740-AMF	58	-3.10189847E-08	3.06247543E-08	-2.46325058E-08	2.45257393E-02	AMF	59				
741-AMF	59	-7.66620540E-09	8.83577300E-09	-6.12331874E-09		AMF	60				
742-DMI	*MFLD	22	17	-1.61232549E-07	AMF	61					
743-AMF	61	5.85623377E-02	-4.56361242E-08	-1.63347067E-07	-3.25585518E-07	AMF	62				
744-AMF	62	1.78371847E-01	-1.03358957E-07	-5.03851879E-07	-2.20105960E-07	AMF	63				
745-AMF	63	6.26575351E-02	-4.77757958E-08	-1.68840927E-07	-2.34563913E-07	AMF	64				
746-AMF	64	3.76204625E-02	-3.30080852E-08	-1.03370951E-07	-2.08457266E-07	AMF	65				
747-AMF	65	2.03292556E-02	-1.93360066E-08	-5.82699720E-08	-1.51141649E-07	AMF	66				
749-AMF	66	1.11925751E-02	-1.17161640E-08	-3.09392085E-08	-1.44539399E-07	AMF	67				
749-AMF	67	8.41044262E-03	-9.11251874E-09	-2.24774155E-08	-1.08111010E-07	AMF	68				
750-AMF	68	4.25686159E-03	-5.12402210E-09	-1.20004948E-08	-6.89204285E-08	AMF	69				

## S O R T E D B U L K D A T A E C H O

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
751- *AMF	69	1.99309597E-03	-2.29887864E-09	-5.44170220E-09	-4.21210480E-08	*AMF	70				
752- *AMF	70	6.43279636E-04	-6.17527363E-10	-1.49737978E-09	-1.18663159E-08	*AMF	71				
753- *AMF	71	5.51326375E-05	-5.45624934E-11	-1.32615308E-10	*AMF	72					
754- DMI	*MFLC	23	17	1.17549632E-07	*AMF	73					
755- *AMF	73	-5.66929680E-08	2.67839059E-02	-3.30284564E-08	2.25224085E-07	*AMF	74				
756- *AMF	74	-1.03358957E-07	1.26462877E-01	-9.23723746E-08	1.60579702E-07	*AMF	75				
757- *AMF	75	-4.75810076E-08	3.11805420E-02	-3.23957288E-08	1.64223138E-07	*AMF	76				
758- *AMF	76	-3.56355336E-08	1.29312761E-02	-1.82831705E-08	1.47931871E-07	*AMF	77				
759- *AMF	77	-2.17280309E-08	4.62135300E-03	-7.21653848E-09	1.07034282E-07	*AMF	78				
760- *AMF	78	-1.23983206E-08	1.96200213E-03	-3.26668492E-09	1.01649164E-07	*AMF	79				
761- *AMF	79	-5.64365299E-09	1.17161428E-03	-1.94150229E-09	7.51562652E-08	*AMF	80				
762- *AMF	80	-5.10882003E-09	4.06190054E-04	-7.32028438E-10	4.79725450E-08	*AMF	81				
763- *AMF	81	-2.42266025E-09	1.31603214E-04	-2.44512632E-10	2.91739148E-08	*AMF	82				
764- *AMF	82	-8.6393574E-10	2.00888899E-05	-2.58035399E-11	8.18649326E-09	*AMF	83				
765- *AMF	83	-7.03365144E-11	4.13636940E-07	-5.17185253E-13	*AMF	84					
766- DMI	*MFLC	24	17	-5.61975853E-08	*AMF	85					
767- *AMF	85	-1.63680284E-07	-3.43343309E-08	1.17744915E-02	-7.80268010E-08	*AMF	86				
768- *AMF	86	-5.03251879E-07	-9.23723746E-08	9.48956609E-02	-7.13311579E-08	*AMF	87				
769- *AMF	87	-1.75656908E-07	-3.40159509E-08	1.71037801E-02	-7.87979388E-08	*AMF	88				
770- *AMF	88	-1.03452635E-07	-1.74023143E-08	5.05789369E-03	-7.09887331E-08	*AMF	89				
771- *AMF	89	-5.57406850E-08	-7.28713800E-09	1.21257664E-03	-5.10822353E-08	*AMF	90				
772- *AMF	90	-3.06344887E-08	-3.25635341E-09	3.91629292E-04	-4.86639671E-08	*AMF	91				
773- *AMF	91	-2.30042687E-08	-2.02448969E-09	1.83049633E-04	-3.59786547E-08	*AMF	92				
774- *AMF	92	-1.17552545E-08	-7.43055617E-10	3.97126860E-05	-2.29503812E-08	*AMF	93				
775- *AMF	93	-5.45288970E-09	-2.48639997E-10	7.95273809E-06	-1.39472078E-08	*AMF	94				
776- *AMF	94	-1.75563133E-09	-3.94244359E-11	3.57091494E-07	-3.91272437E-09	*AMF	95				
777- *AMF	95	-1.50809615E-10	-8.22092665E-13	1.28512312E-09	*AMF	96					
778- DMI	*MFLC	25	17	2.73521602E-01	*AMF	97					
779- *AMF	97	-1.23502957E-07	7.41083568E-08	-4.84915432E-08	5.09292722E-01	*AMF	98				
780- *AMF	98	-2.20105960E-07	1.60579702E-07	-7.13311579E-08	5.65225065E-01	*AMF	99				
781- *AMF	99	-2.13148496E-07	1.35436210E-07	-6.60641604E-08	5.19230485E-01	*AMF	100				
782- *AMF	100	-2.53051326E-07	1.30967749E-07	-8.81552182E-08	4.45596635E-01	*AMF	101				
783- *AMF	101	-2.34189486E-07	1.11075678E-07	-7.13043846E-08	3.17531884E-01	*AMF	102				
784- *AMF	102	-1.56807744E-07	1.04063929E-07	-6.61415243E-08	3.00822616E-01	*AMF	103				
785- *AMF	103	-1.34068898E-07	9.81360131E-08	-5.34552989E-08	2.21588492E-01	*AMF	104				
786- *AMF	104	-1.18346520E-07	8.56583711E-08	-3.59562691E-08	1.41137719E-01	*AMF	105				
787- *AMF	105	-6.90151865E-08	4.52832261E-08	-2.49822563E-08	8.56810212E-02	*AMF	106				
788- *AMF	106	-3.02533927E-08	3.00088097E-08	-2.41408102E-08	2.40357630E-02	*AMF	107				
789- *AMF	107	-6.91245106E-09	8.65914629E-09	-6.00098460E-09	*AMF	108					
790- DMI	*MFLC	26	17	-1.14348154E-07	*AMF	109					
791- *AMF	109	2.36592293E-02	-2.14284306E-08	-6.52957510E-08	-2.11528004E-07	*AMF	110				
792- *AMF	110	6.26575351E-02	-4.79810076E-08	-1.75656908E-07	-2.13148496E-07	*AMF	111				
793- *AMF	111	1.06022775E-01	-5.49685524E-08	-2.95202824E-07	-2.18730520E-07	*AMF	112				
794- *AMF	112	5.45338348E-02	-3.81453624E-08	-1.53651740E-07	-1.91377694E-07	*AMF	113				
795- *AMF	113	2.80268490E-02	-2.32475053E-08	-8.09641847E-08	-1.38785481E-07	*AMF	114				
796- *AMF	114	1.51125118E-02	-1.44351446E-08	-4.19710844E-08	-1.32762352E-07	*AMF	115				
797- *AMF	115	1.12371743E-02	-1.13713661E-08	-3.01211394E-08	-9.96423069E-08	*AMF	116				
798- *AMF	116	5.68982586E-03	-6.51430909E-09	-1.59094888E-08	-6.34501589E-08	*AMF	117				
799- *AMF	117	2.62935832E-03	-2.94587554E-09	-7.18258519E-09	-3.88419998E-08	*AMF	118				
800- *AMF	118	8.47022049E-04	-7.99805555E-10	-1.97180827E-09	-1.09618661E-08	*AMF	119				

SORTED BULK DATA ECHO

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COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
801-AMF	119	7.25853024E-05	-7.15590642E-11	-1.74597475E-10						*AMF 120
802-DMI	*MFLC		27		17			7.33102752E-08		*AMF 121
803-AMF	121	-2.25564669E-08	7.26161525E-03	-1.07332170E-08	1.32427658E-07	*AMF 122				
804-AMF	122	-4.77757952E-08	3.11805420E-02	-3.40159509E-08	1.35436210E-07	*AMF 123				
805-AMF	123	-5.45685524E-08	7.53585100E-02	-5.32368141E-08	1.32213131E-07	*AMF 124				
806-AMF	124	-4.19746620E-08	2.77355537E-02	-3.14680939E-08	1.21071764E-07	*AMF 125				
807-AMF	125	-2.64036863E-08	9.37557220E-03	-1.27796547E-08	8.82548647E-08	*AMF 126				
809-AMF	126	-1.51349582E-08	3.86599894E-03	-5.85910342E-09	8.35105993E-08	*AMF 127				
809-AMF	127	-1.19050405E-08	2.27076630E-03	-3.50269791E-09	6.17028491E-08	*AMF 128				
810-AMF	128	-6.38251052E-09	7.75044784E-04	-1.34334077E-09	3.93981843E-08	*AMF 129				
811-AMF	129	-3.05060882E-09	2.49649398E-04	-4.53194815E-10	2.39662583E-08	*AMF 130				
812-AMF	130	-1.03278830E-09	3.81000718E-05	-4.84539492E-11	6.72729428E-09	*AMF 131				
813-AMF	131	-5.04990805E-11	7.84471183E-07	-9.77044834E-13		*AMF 132				
814-DMI	*MFLD		28		17			-4.70881218E-08		*AMF 133
815-AMF	133	-6.31134753E-08	-1.07126645E-08	2.18403735E-03	-8.07746119E-08	*AMF 134				
816-AMF	134	-1.68840927E-07	-3.23957288E-08	1.71037801E-02	-6.60641604E-08	*AMF 135				
817-AMF	135	-2.95202824E-07	-5.32368141E-08	5.76457605E-02	-8.32104661E-08	*AMF 136				
818-AMF	136	-1.47217804E-07	-2.82740444E-08	1.58428624E-02	-7.67071811E-08	*AMF 137				
819-AMF	137	-7.46355795E-08	-1.26215411E-08	3.65627185E-03	-5.52387327E-08	*AMF 138				
820-AMF	138	-4.00835098E-08	-5.68673642E-09	1.14323036E-03	-5.27013242E-08	*AMF 139				
821-AMF	139	-2.57603044E-08	-3.57525387E-09	5.22321323E-04	-3.89457533E-08	*AMF 140				
822-AMF	140	-1.50757273E-08	-1.33811096E-09	1.10244771E-04	-2.48321044E-08	*AMF 141				
823-AMF	141	-6.56735469E-09	-4.52803794E-10	2.19494104E-05	-1.50818060E-08	*AMF 142				
824-AMF	142	-2.24361152E-09	-7.31565780E-11	9.84825419E-07	-4.23095514E-09	*AMF 143				
825-AMF	143	-1.92265216E-10	-1.53274268E-12	3.54329699E-09		*AMF 144				
826-DMI	*MFLC		29		17			2.81060696E-01		*AMF 145
827-AMF	145	-1.32212961E-07	7.69169901E-08	-5.07903053E-08	5.10307133E-01	*AMF 146				
828-AMF	146	-2.34563913E-07	1.64223138E-07	-7.87979388E-08	5.19230485E-01	*AMF 147				
829-AMF	147	-2.18730520E-07	1.32213131E-07	-8.32104661E-08	7.31136799E-01	*AMF 148				
830-AMF	148	-3.48593119E-07	1.56989756E-07	-1.04577964E-07	5.84424794E-01	*AMF 149				
831-AMF	149	-3.04660091E-07	1.37462393E-07	-8.92420644E-08	4.09406304E-01	*AMF 150				
832-AMF	150	-2.01194155E-07	1.31052047E-07	-8.40475423E-08	3.84998322E-01	*AMF 151				
833-AMF	151	-1.70581991E-07	1.23851919E-07	-6.78871857E-08	2.82048047E-01	*AMF 152				
834-AMF	152	-1.50383414E-07	1.08462018E-07	-4.56654625E-08	1.79263532E-01	*AMF 153				
835-AMF	153	-8.75492105E-08	5.73352175E-08	-3.17108686E-08	1.08648896E-01	*AMF 154				
836-AMF	154	-3.83290164E-08	3.80254939E-08	-3.06111616E-08	3.04769464E-02	*AMF 155				
837-AMF	155	-6.76195116E-09	1.09790825E-08	-7.60914531E-09		*AMF 156				
838-DMI	*MFLC		30		17			-1.42914928E-07		*AMF 157
839-AMF	157	1.49253607E-02	-1.52052380E-08	-4.09190513E-08	-2.58947580E-07	*AMF 158				
840-AMF	158	3.76204625E-02	-3.56355336E-08	-1.03452635E-07	-2.53051326E-07	*AMF 159				
841-AMF	159	5.49338348E-02	-4.19746620E-08	-1.47217804E-07	-3.48593119E-07	*AMF 160				
842-AMF	160	1.19103372E-01	-6.43493081E-08	-3.31349383E-07	-2.87585351E-07	*AMF 161				
843-AMF	161	5.31555573E-02	-3.79788787E-08	-1.53310964E-07	-2.06378616E-07	*AMF 162				
844-AMF	162	2.71584786E-02	-2.36728539E-08	-7.54588427E-08	-1.96519466E-07	*AMF 163				
845-AMF	163	1.97121687E-02	-1.86825879E-08	-5.28003916E-08	-1.47238836E-07	*AMF 164				
846-AMF	164	5.78237391E-03	-1.07998517E-08	-2.73436278E-08	-9.35646653E-08	*AMF 165				
847-AMF	165	4.48845699E-03	-4.90227592E-09	-1.22592461E-08	-5.72598928E-08	*AMF 166				
848-AMF	166	1.44083472E-03	-1.34101064E-09	-3.35408346E-09	-1.61736082E-08	*AMF 167				
849-AMF	167	1.2302864E-04	-1.21294905E-10	-2.96931146E-10		*AMF 168				
850-DMI	*MFLD		31		17			7.40217274E-08		*AMF 169



## S O R T E D B U L K D A T A E C H O

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
851-	*AMF 169	-1.52536863E-08	3.14712757E-03	-5.12167730E-09	1.32755133E-07	*AMF 170					
852-	*AMF 170	-3.30080852E-08	1.29312761E-02	-1.74023143E-08	1.30967749E-07	*AMF 171					
853-	*AMF 171	-3.81453624E-08	2.7735537E-02	-2.82740444E-08	1.56989756E-07	*AMF 172					
854-	*AMF 172	-6.43493081E-08	8.29327703E-02	-6.82440486E-08	1.47019932E-07	*AMF 173					
855-	*AMF 173	-4.11083825E-08	2.92317376E-02	-2.80381123E-08	1.08299503E-07	*AMF 174					
856-	*AMF 174	-2.34128770E-08	9.78355110E-03	-1.29248257E-08	1.01640012E-07	*AMF 175					
857-	*AMF 175	-1.86300895E-08	5.54407388E-03	-7.73224329E-09	7.49392370E-08	*AMF 176					
858-	*AMF 176	-1.01170201E-08	1.83082954E-03	-3.01815284E-09	4.78611746E-08	*AMF 177					
859-	*AMF 177	-4.88073226E-09	5.84049150E-04	-1.02954845E-09	2.91214981E-08	*AMF 178					
860-	*AMF 178	-1.68324887E-09	8.90953816E-05	-1.11939125E-10	8.17850676E-09	*AMF 179					
861-	*AMF 179	-1.46873192E-10	1.83435077E-06	-2.27803540E-12		*AMF 180					
862-	DMI	*MFLD	32	17	-5.23736681E-08	*AMF 181					
863-	*AMF 181	-4.08075067E-08	-5.45826850E-09	6.56526769E-04	-9.30457418E-08	*AMF 182					
864-	*AMF 182	-1.03370951E-07	-1.82831705E-08	5.05789369E-03	-8.81552182E-08	*AMF 183					
865-	*AMF 183	-1.53651740E-07	-3.14680939E-08	1.58428624E-02	-1.04577964E-07	*AMF 184					
866-	*AMF 184	-3.31349383E-07	-6.82440486E-08	6.28658533E-02	-1.03103105E-07	*AMF 185					
867-	*AMF 185	-1.46351397E-07	-3.07638999E-08	1.36570856E-02	-7.44389581E-08	*AMF 186					
868-	*AMF 186	-7.43070814E-08	-1.35882843E-08	4.03625518E-03	-7.13258714E-08	*AMF 187					
869-	*AMF 187	-5.37014238E-08	-8.52006821E-09	1.76754338E-03	-5.26849746E-08	*AMF 188					
870-	*AMF 188	-2.66723461E-08	-3.21155147E-09	3.53509095E-04	-3.35693358E-08	*AMF 189					
871-	*AMF 189	-1.22400863E-08	-1.09358944E-09	6.97666401E-05	-2.03677040E-08	*AMF 190					
872-	*AMF 190	-3.92647337E-09	-1.79705834E-10	3.12051543E-06	-5.71368375E-09	*AMF 191					
873-	*AMF 191	-3.36398909E-10	-3.78140574E-12	1.12147021E-08		*AMF 192					
874-	DMI	*MFLD	33	17	2.48964071E-01	*AMF 193					
875-	*AMF 193	-1.17985053E-07	6.90058073E-08	-4.52156534E-08	4.48567867E-01	*AMF 194					
876-	*AMF 194	-2.08457266E-07	1.47931871E-07	-7.09887331E-08	4.45596635E-01	*AMF 195					
877-	*AMF 195	-1.91377694E-07	1.21071764E-07	-7.67071811E-08	5.84424794E-01	*AMF 196					
878-	*AMF 196	-2.87585351E-07	1.47019932E-07	-1.03103105E-07	6.98386550E-01	*AMF 197					
879-	*AMF 197	-3.37361712E-07	1.49279117E-07	-8.82146765E-08	4.56478119E-01	*AMF 198					
880-	*AMF 198	-2.13430837E-07	1.41393400E-07	-8.88068143E-08	4.17865515E-01	*AMF 199					
881-	*AMF 199	-1.76658297E-07	1.32153787E-07	-7.17506623E-08	3.01083624E-01	*AMF 200					
882-	*AMF 200	-1.57442628E-07	1.15156979E-07	-4.84205174E-08	1.90390766E-01	*AMF 201					
883-	*AMF 201	-9.16047611E-08	6.07019501E-08	-3.36156170E-08	1.14975631E-01	*AMF 202					
884-	*AMF 202	-4.01236449E-08	4.02103630E-08	-3.23908793E-08	3.22471745E-02	*AMF 203					
885-	*AMF 203	-9.23344956E-09	1.16161907E-08	-8.05110645E-09		*AMF 204					
886-	DMI	*MFLD	34	17	-1.33812250E-07	*AMF 205					
887-	*AMF 205	8.21207836E-03	-8.97803432E-09	-2.24923546E-08	-2.40874726E-07	*AMF 206					
888-	*AMF 206	2.03292556E-02	-2.17280309E-08	-5.57406850E-08	-2.34189486E-07	*AMF 207					
889-	*AMF 207	2.80268490E-02	-2.64036863E-08	-7.46355795E-08	-3.04660091E-07	*AMF 208					
890-	*AMF 208	5.31595573E-02	-4.11083825E-08	-1.46351397E-07	-3.37361712E-07	*AMF 209					
891-	*AMF 209	1.08508527E-01	-5.72796139E-08	-3.16097612E-07	-2.31658419E-07	*AMF 210					
892-	*AMF 210	4.76565324E-02	-3.43796920E-08	-1.33114384E-07	-2.16980254E-07	*AMF 211					
893-	*AMF 211	3.19083147E-02	-2.66644555E-08	-8.58312319E-08	-1.61744538E-07	*AMF 212					
894-	*AMF 212	1.49312168E-02	-1.54759334E-08	-4.17973034E-08	-1.02284389E-07	*AMF 213					
895-	*AMF 213	6.74488395E-03	-7.05274061E-09	-1.84342923E-08	-6.25984740E-08	*AMF 214					
896-	*AMF 214	2.14907899E-03	-1.95150140E-09	-5.00332575E-09	-1.77236288E-08	*AMF 215					
897-	*AMF 215	1.84029137E-04	-1.79821602E-10	-4.42669679E-10		*AMF 216					
898-	DMI	*MFLD	35	17	6.31305852E-13	*AMF 217					
899-	*AMF 217	-8.55573746E-09	1.14565925E-03	-2.00829176E-09	1.13167744E-07	*AMF 218					
900-	*AMF 218	-1.93360066E-08	4.62135300E-03	-7.28713800E-09	1.11075678E-07	*AMF 219					

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CARD

COUNT	1	2	3	4	5	6	7	8	9	10
901-	*AMF	219	-2.32475053E-08	9.37557220E-03	-1.26215411E-08	1.37462393E-07	*AMF	220		
902-	*AMF	220	-3.75788787E-08	2.52317376E-02	-3.07638999E-08	1.49279117E-07	*AMF	221		
903-	*AMF	221	-5.72756139E-08	7.51198530E-02	-6.11313453E-08	1.12603573E-07	*AMF	222		
904-	*AMF	222	-3.08567356E-08	2.53895707E-02	-2.67577143E-08	1.02828096E-07	*AMF	223		
905-	*AMF	223	-2.47877736E-08	1.31429397E-02	-1.55125619E-08	7.53246354E-08	*AMF	224		
906-	*AMF	224	-1.36582905E-08	3.97976488E-03	-6.09107786E-09	4.81390714E-08	*AMF	225		
907-	*AMF	225	-6.68363853E-09	1.24706281E-03	-2.10483853E-09	2.93122469E-08	*AMF	226		
908-	*AMF	226	-2.37547115E-09	1.90035018E-04	-2.34710251E-10	8.24183388E-09	*AMF	227		
909-	*AMF	227	-2.13350587E-10	3.91203594E-06	-4.84187430E-12		*AMF	228		
910-	DMI	*MFLC	36	17		-4.09470395E-08	*AMF	229		
911-	*AMF	229	-2.34883863E-08	-2.03802131E-09	1.58654642E-04	-7.32852072E-08	*AMF	230		
912-	*AMF	230	-5.82699720E-08	-7.21653848E-09	1.21257664E-03	-7.13043846E-08	*AMF	231		
913-	*AMF	231	-8.09641847E-08	-1.27796547E-08	3.65627185E-03	-8.92420644E-08	*AMF	232		
914-	*AMF	232	-1.53310964E-07	-2.80381123E-08	1.36570856E-02	-8.82146765E-08	*AMF	233		
915-	*AMF	233	-3.16097612E-07	-6.11313453E-08	5.67735434E-02	-6.64549589E-08	*AMF	234		
916-	*AMF	234	-1.36828362E-07	-2.55959236E-08	1.52796321E-02	-6.58772024E-08	*AMF	235		
917-	*AMF	235	-9.10786753E-08	-1.59746421E-08	6.17848709E-03	-4.90124066E-08	*AMF	236		
918-	*AMF	236	-4.26910525E-08	-6.16177331E-09	1.10310875E-03	-3.12543271E-08	*AMF	237		
919-	*AMF	237	-1.92910790E-08	-2.13998841E-09	2.15378110E-04	-1.89414600E-08	*AMF	238		
920-	*AMF	238	-6.13831475E-09	-3.65947050E-10	9.53850849E-06	-5.31363398E-09	*AMF	239		
921-	*AMF	239	-5.25636645E-10	-7.77896410E-12	3.41575372E-08		*AMF	240		
922-	DMI	*MFLC	37	17		1.78872287E-01	*AMF	241		
923-	*AMF	241	-8.54429913E-08	4.98198318E-08	-3.25102754E-08	3.21601212E-01	*AMF	242		
924-	*AMF	242	-1.51141649E-07	1.07034282E-07	-5.10822353E-08	3.17531884E-01	*AMF	243		
925-	*AMF	243	-1.38785481E-07	8.82548647E-08	-5.52387327E-08	4.09406304E-01	*AMF	244		
926-	*AMF	244	-2.06378616E-07	1.08299503E-07	-7.44389581E-08	4.56478119E-01	*AMF	245		
927-	*AMF	245	-2.31658419E-07	1.12603573E-07	-6.64549589E-08	4.00977612E-01	*AMF	246		
928-	*AMF	246	-1.79095025E-07	1.25818815E-07	-6.51161258E-08	3.43769193E-01	*AMF	247		
929-	*AMF	247	-1.43114846E-07	1.09770042E-07	-5.44922756E-08	2.39314973E-01	*AMF	248		
930-	*AMF	248	-1.23977316E-07	9.19571335E-08	-3.79036393E-08	1.50333166E-01	*AMF	249		
931-	*AMF	249	-7.18515025E-08	4.80682445E-08	-2.64362612E-08	9.04085636E-02	*AMF	250		
932-	*AMF	250	-3.14031396E-08	3.16394555E-08	-2.54653081E-08	2.53528021E-02	*AMF	251		
933-	*AMF	251	-7.24679339E-09	9.13310672E-09	-6.32978470E-09		*AMF	252		
934-	DMI	*MFLD	38	17		-8.99059387E-08	*AMF	253		
935-	*AMF	253	4.55071777E-03	-5.08254061E-09	-1.24569617E-08	-1.61540640E-07	*AMF	254		
936-	*AMF	254	1.11925751E-02	-1.23983206E-08	-3.06344887E-08	-1.56807744E-07	*AMF	255		
937-	*AMF	255	1.51125118E-02	-1.51349582E-08	-4.00835098E-08	-2.01194155E-07	*AMF	256		
938-	*AMF	256	2.71984786E-02	-2.34128770E-08	-7.43070814E-08	-2.13430837E-07	*AMF	257		
939-	*AMF	257	4.76565324E-02	-3.08567358E-08	-1.36828362E-07	-1.79095025E-07	*AMF	258		
940-	*AMF	258	6.28011227E-02	-3.30573577E-08	-1.74782826E-07	-1.61021262E-07	*AMF	259		
941-	*AMF	259	3.61492112E-02	-2.46653116E-08	-9.70389351E-08	-1.18427465E-07	*AMF	260		
942-	*AMF	260	1.49565547E-02	-1.43132937E-08	-4.19404458E-08	-7.44419140E-08	*AMF	261		
943-	*AMF	261	6.63008913E-03	-6.56599042E-09	-1.81126651E-08	-4.55857716E-08	*AMF	262		
944-	*AMF	262	2.09199055E-03	-1.84310012E-09	-4.87006702E-09	-1.29456197E-08	*AMF	263		
945-	*AMF	263	1.79022070E-04	-1.73763531E-10	-4.30625313E-10		*AMF	264		
946-	DMI	*MFLC	39	17		5.90598255E-08	*AMF	265		
947-	*AMF	265	-5.05775333E-09	4.90898499E-04	-8.82239393E-10	1.05943684E-07	*AMF	266		
948-	*AMF	266	-1.17161640E-08	1.96200213E-03	-3.25635341E-09	1.04063929E-07	*AMF	267		
949-	*AMF	267	-1.44351446E-08	3.86599894E-03	-5.68673642E-09	1.31052047E-07	*AMF	268		
950-	*AMF	268	-2.36728539E-08	9.78355110E-03	-1.35882843E-08	1.41393400E-07	*AMF	269		

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

CARD COUNT	1	2	3	4	5	6	7	8	9	10
951- *AMF	269	-3.43796920E-08	2.53895707E-02	-2.55959236E-08	1.28018013E-07	*AMF	270			
952- *AMF	270	-3.30573577E-08	4.39098664E-02	-3.24104406E-08	1.07984207E-07	*AMF	271			
953- *AMF	271	-2.50750638E-08	1.96342915E-02	-1.77011010E-08	7.72431000E-08	*AMF	272			
954- *AMF	272	-1.33842555E-08	5.01124561E-03	-6.97969682E-09	4.91717422E-08	*AMF	273			
955- *AMF	273	-6.56114807E-09	1.52613828E-03	-2.45121079E-09	2.98655216E-08	*AMF	274			
956- *AMF	274	-2.36726794E-09	2.31530721E-04	-2.80919288E-10	8.40017478E-09	*AMF	275			
957- *AMF	275	-2.14674806E-10	4.76358309E-06	-5.87816341E-12		*AMF	276			
959- DMI	*MFLC	40	17							
959- *AMF	277	-1.25631239E-08	-8.98737307E-10	5.15687861E-05	-6.74574406E-08	*AMF	278			
960- *AMF	278	-3.09392085E-08	-3.26668492E-09	3.91629292E-04	-6.61415243E-08	*AMF	279			
961- *AMF	279	-4.19710844E-08	-5.85910342E-09	1.14323036E-03	-8.40475423E-08	*AMF	280			
962- *AMF	280	-7.54588427E-08	-1.29248257E-08	4.03625518E-03	-8.88068103E-08	*AMF	281			
963- *AMF	281	-1.32114384E-07	-2.67577143E-08	1.52796321E-02	-6.51161256E-08	*AMF	282			
964- *AMF	282	-1.74782826E-07	-3.24104406E-08	3.35555673E-02	-6.64910504E-08	*AMF	283			
965- *AMF	283	-9.95941036E-08	-1.90231226E-08	1.21022277E-02	-4.94025016E-08	*AMF	284			
966- *AMF	284	-4.14342516E-08	-7.17445658E-09	1.74034201E-03	-3.14492503E-08	*AMF	285			
967- *AMF	285	-1.83272881E-08	-2.51198529E-09	3.26437410E-04	-1.90147382E-08	*AMF	286			
968- *AMF	286	-5.77038506E-09	-4.41630066E-10	1.41173559E-05	-5.33367379E-09	*AMF	287			
969- *AMF	287	-4.93805219E-10	-9.44957394E-12	5.01115096E-08		*AMF	288			
970- DMI	*MFLC	41	17							
971- *AMF	289	-8.16531838E-08	4.73786343E-08	-3.09430703E-08	3.05588205E-01	*AMF	290			
972- *AMF	290	-1.44539399E-07	1.01649164E-07	-4.86639671E-08	3.00822616E-01	*AMF	291			
973- *AMF	291	-1.32762352E-07	8.35105993E-08	-9.27013242E-08	3.84998322E-01	*AMF	292			
974- *AMF	292	-1.96519466E-07	1.01640012E-07	-7.13258714E-08	4.17866581E-01	*AMF	293			
975- *AMF	293	-2.16980254E-07	1.02828096E-07	-6.58772024E-08	3.43769103E-01	*AMF	294			
976- *AMF	294	-1.61021262E-07	1.07964297E-07	-6.64910544E-08	3.93243134E-01	*AMF	295			
977- *AMF	295	-1.55051453E-07	1.16213812E-07	-5.44120624E-08	2.93815051E-01	*AMF	296			
978- *AMF	296	-1.29131365E-07	9.55323571E-08	-3.90579338E-08	1.57236605E-01	*AMF	297			
979- *AMF	297	-7.42361976E-08	4.97054664E-08	-2.74462444E-08	9.38442945E-02	*AMF	298			
980- *AMF	298	-3.23233991E-08	3.27563079E-08	-2.64237592E-08	2.63085254E-02	*AMF	299			
981- *AMF	299	-7.45671258E-09	9.47564160E-09	-6.56836363E-09		*AMF	300			
982- DMI	*MFLC	42	17							
983- *AMF	301	3.42131484E-03	-3.91396071E-09	-9.39070688E-09	-1.38202154E-07	*AMF	302			
984- *AMF	302	8.41044262E-03	-9.64365299E-09	-2.30042687E-08	-1.34068898E-07	*AMF	303			
985- *AMF	303	1.12371743E-02	-1.19050405E-08	-2.97603044E-08	-1.70961991E-07	*AMF	304			
986- *AMF	304	1.97121687E-02	-1.86300895E-08	-5.37014238E-08	-1.78658297E-07	*AMF	305			
987- *AMF	305	3.19083147E-02	-2.47877736E-08	-9.10786753E-08	-1.43114846E-07	*AMF	306			
988- *AMF	306	3.61492112E-02	-2.50750638E-08	-9.95941036E-08	-1.55051453E-07	*AMF	307			
989- *AMF	307	6.07872941E-02	-3.28345706E-08	-1.61910805E-07	-1.10640250E-07	*AMF	308			
990- *AMF	308	2.11501755E-02	-1.80939033E-08	-5.89914426E-08	-6.87197712E-08	*AMF	309			
991- *AMF	309	8.96172971E-03	-8.28159585E-09	-2.44538576E-08	-4.21239932E-08	*AMF	310			
992- *AMF	310	2.77568330E-03	-2.35376407E-09	-6.46045351E-09	-1.20244614E-08	*AMF	311			
993- *AMF	311	2.37225700E-04	-2.28371974E-10	-5.70626879E-10		*AMF	312			
994- DMI	*MFLC	43	17							
995- *AMF	313	-3.91749921E-09	2.94663245E-04	-5.40196554E-10	1.00007298E-07	*AMF	314			
996- *AMF	314	-9.11251874E-09	1.17161428E-03	-2.02448969E-09	9.81360131E-08	*AMF	315			
997- *AMF	315	-1.12713661E-08	2.27076630E-03	-3.57525387E-09	1.23851919E-07	*AMF	316			
998- *AMF	316	-1.86825879E-08	5.54407389E-03	-8.52006821E-09	1.32153787E-07	*AMF	317			
999- *AMF	317	-2.66644555E-08	1.31429397E-02	-1.59746421E-08	1.09770042E-07	*AMF	318			
1000- *AMF	318	-2.46653116E-08	1.96342915E-02	-1.90231226E-08	1.16213812E-07	*AMF	319			

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1001-AMF	319	-3.28345706E-08	4.27030101E-02	-2.69147122E-08	7.95056394E-08	AMF	320			
1002-AMF	320	-1.66179106E-08	9.39138979E-03	-1.08279714E-08	5.04940054E-08	AMF	321			
1003-AMF	321	-8.21567170E-09	2.72328383E-03	-3.94836519E-09	3.06580610E-08	AMF	322			
1004-AMF	322	-3.06215608E-09	4.08952590E-04	-4.75950834E-10	8.63915517E-09	AMF	323			
1005-AMF	323	-2.83045809E-10	8.40296889E-06	-1.02938933E-11		AMF	324			
1006-DMI	*MFLD		44	17				-3.03963326E-08	AMF	325
1007-AMF	325	-9.16277187E-09	-5.26582111E-10	2.42011592E-05	-5.45148637E-08	AMF	326			
1008-AMF	326	-2.24774155E-08	-1.94150229E-09	1.83049633E-04	-5.34552989E-08	AMF	327			
1009-AMF	327	-3.01211394E-08	-3.50269791E-09	5.22321323E-04	-6.78871857E-08	AMF	328			
1010-AMF	328	-5.28003916E-08	-7.73224329E-09	1.76754338E-03	-7.17506623E-08	AMF	329			
1011-AMF	329	-8.58312319E-08	-1.55125619E-08	6.17848709E-03	-5.44922756E-08	AMF	330			
1012-AMF	330	-5.70389351E-08	-1.77011010E-08	1.21022277E-02	-5.44120624E-08	AMF	331			
1013-AMF	331	-1.61910805E-07	-2.69147122E-08	3.29078324E-02	-4.28752642E-08	AMF	332			
1014-AMF	332	-5.66260603E-08	-1.05538973E-08	4.56614047E-03	-2.76443117E-08	AMF	333			
1015-AMF	333	-2.40169484E-08	-3.85433552E-09	8.29478493E-04	-1.67546581E-08	AMF	334			
1016-AMF	334	-7.40768513E-09	-7.29233118E-10	3.67109751E-05	-4.70138772E-09	AMF	335			
1017-AMF	335	-6.33116670E-10	-1.59229574E-11	1.31430738E-07		AMF	336			
1019-DMI	*MFLC		45	17				1.25778019E-01	AMF	337
1019-AMF	337	-6.09181257E-08	3.50451401E-08	-2.28782575E-08	2.25656569E-01	AMF	338			
1020-AMF	338	-1.08111010E-07	7.51562652E-08	-3.59786547E-08	2.21588492E-01	AMF	339			
1021-AMF	339	-9.56423069E-08	6.17028491E-08	-3.89457533E-08	2.82048047E-01	AMF	340			
1022-AMF	340	-1.47238836E-07	7.49392370E-08	-5.26849746E-08	3.01083624E-01	AMF	341			
1023-AMF	341	-1.61744532E-07	7.93246354E-08	-4.90124066E-08	2.39314973E-01	AMF	342			
1024-AMF	342	-1.18427465E-07	7.72431008E-08	-4.94025016E-08	2.53815651E-01	AMF	343			
1025-AMF	343	-1.10640252E-07	7.95056394E-08	-4.28752642E-08	2.47329950E-01	AMF	344			
1026-AMF	344	-1.22828283E-07	8.46338253E-08	-2.88869089E-08	1.39764488E-01	AMF	345			
1027-AMF	345	-6.53843699E-08	4.22631459E-08	-2.28770389E-08	8.08407664E-02	AMF	346			
1028-AMF	346	-2.77003878E-08	2.79201764E-08	-2.26523298E-08	2.26350315E-02	AMF	347			
1029-AMF	347	-6.43795772E-09	8.14641865E-09	-5.65076519E-09		AMF	348			
1030-DMI	*MFLD		46	17				-6.77578669E-08	AMF	349
1031-AMF	349	1.75850443E-03	-2.05156669E-09	-4.81293938E-09	-1.21529581E-07	AMF	350			
1032-AMF	350	4.29686159E-03	-5.10882003E-09	-1.17552545E-08	-1.18346520E-07	AMF	351			
1033-AMF	351	6.68582586E-03	-6.38251052E-09	-1.50757273E-08	-1.50383414E-07	AMF	352			
1034-AMF	352	9.78237391E-03	-1.01170201E-08	-2.66723461E-08	-1.57442628E-07	AMF	353			
1035-AMF	353	1.45312168E-02	-1.36582905E-08	-4.26910525E-08	-1.23977316E-07	AMF	354			
1036-AMF	354	1.49965547E-02	-1.33842555E-08	-4.14342516E-08	-1.29131365E-07	AMF	355			
1037-AMF	355	2.11501755E-02	-1.66179106E-08	-5.66260603E-08	-1.22828283E-07	AMF	356			
1038-AMF	356	3.87309268E-02	-2.30840840E-08	-1.08921995E-07	-7.04886247E-08	AMF	357			
1039-AMF	357	1.31673254E-02	-9.73495418E-09	-3.60762442E-08	-4.24027142E-08	AMF	358			
1040-AMF	358	3.83357145E-03	-2.83700463E-09	-8.93220076E-09	-1.21701191E-08	AMF	359			
1041-AMF	359	3.26124789E-04	-3.05420356E-10	-7.84649901E-10		AMF	360			
1042-DMI	*MFLC		47	17				4.87084257E-08	AMF	361
1043-AMF	361	-2.16631668E-09	1.02667414E-04	-1.93700625E-10	8.73375825E-08	AMF	362			
1044-AMF	362	-5.12402210E-09	4.06190054E-04	-7.43055617E-10	8.56583711E-08	AMF	363			
1045-AMF	363	-6.5143C909E-09	7.75044784E-04	-1.33811096E-09	1.08462018E-07	AMF	364			
1046-AMF	364	-1.07998517E-08	1.83082954E-03	-3.21155147E-09	1.15156979E-07	AMF	365			
1047-AMF	365	-1.54759334E-08	3.97976488E-03	-6.16177331E-09	9.19571335E-08	AMF	366			
1048-AMF	366	-1.43132937E-08	5.01124561E-03	-7.17445658E-09	9.55323571E-08	AMF	367			
1049-AMF	367	-1.80939033E-08	9.39138979E-03	-1.05538973E-08	8.46338253E-08	AMF	368			
1050-AMF	368	-2.30840840E-08	2.72372551E-02	-1.94985503E-08	5.14371266E-08	AMF	369			

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1051- *AMF 369	-1.04837241E-08	6.43364713E-03	-6.96429581E-09	3.09274029E-08	*AMF 370					
1052- *AMF 370	-4.14400603E-09	9.79896169E-04	-9.10606035E-10	8.76577388E-09	*AMF 371					
1053- *AMF 371	-4.03394429E-10	2.01707153E-05	-2.37194847E-11		*AMF 372					
1054- DMI	*MFLD	48	17	-2.04432240E-08	*AMF 373					
1055- *AMF 373	-4.90957675E-09	-1.93383767E-10	5.27083921E-06	-3.66608752E-08	*AMF 374					
1056- *AMF 374	-1.20004948E-08	-7.32028438E-10	3.97126860E-05	-3.59562691E-08	*AMF 375					
1057- *AMF 375	-1.5654888E-08	-1.34334077E-09	1.10244771E-04	-4.56654625E-08	*AMF 376					
1059- *AMF 376	-2.73436278E-08	-3.01815284E-09	3.53509095E-04	-4.84205174E-08	*AMF 377					
1059- *AMF 377	-4.17973034E-08	-6.09107786E-09	1.10310875E-03	-3.79036393E-08	*AMF 378					
1060- *AMF 378	-4.19404458E-08	-6.97969682E-09	1.74034201E-03	-3.90579338E-08	*AMF 379					
1061- *AMF 379	-5.89914428E-08	-1.08279714E-08	4.56614047E-03	-2.88869089E-08	*AMF 380					
1062- *AMF 380	-1.08921995E-07	-1.94985503E-08	2.08160207E-02	-2.08298907E-08	*AMF 381					
1063- *AMF 381	-3.71651545E-08	-6.94537050E-09	3.44815175E-03	-1.30425093E-08	*AMF 382					
1064- *AMF 382	-1.06984359E-08	-1.57746260E-09	2.30406979E-04	-3.67908126E-09	*AMF 383					
1065- *AMF 383	-9.10369113E-10	-3.92129051E-11	9.26412497E-07		*AMF 384					
1066- DMI	*MFLD	49	17	8.02373290E-02	*AMF 385					
1067- *AMF 385	-3.88552976E-08	2.23691039E-08	-1.45959262E-08	1.43884778E-01	*AMF 386					
1068- *AMF 386	-6.89204285E-08	4.79725450E-08	-2.29503812E-08	1.41137719E-01	*AMF 387					
1069- *AMF 387	-6.34501589E-08	3.93981843E-08	-2.48321044E-08	1.79263532E-01	*AMF 388					
1070- *AMF 388	-9.35646653E-08	4.78611746E-08	-3.35693358E-08	1.90390766E-01	*AMF 389					
1071- *AMF 389	-1.02284389E-07	4.81390714E-08	-3.12543271E-08	1.50333166E-01	*AMF 390					
1072- *AMF 390	-7.44419140E-08	4.91717422E-08	-3.14492503E-08	1.57236695E-01	*AMF 391					
1073- *AMF 391	-6.87197712E-08	5.04940054E-08	-2.76443117E-08	1.39764488E-01	*AMF 392					
1074- *AMF 392	-7.04886247E-08	5.14371266E-08	-2.08298907E-08	1.16237521E-01	*AMF 393					
1075- *AMF 393	-4.64548651E-08	3.15936504E-08	-1.49913362E-08	5.95711507E-02	*AMF 394					
1076- *AMF 394	-1.94674143E-08	2.02312407E-08	-1.65176779E-08	1.65934972E-02	*AMF 395					
1077- *AMF 395	-4.64261873E-09	5.96557470E-09	-4.14190282E-09		*AMF 396					
1078- DMI	*MFLC	50	17	-3.95034476E-08	*AMF 397					
1079- *AMF 397	8.16836953E-04	-9.66346336E-10	-2.23567098E-09	-7.08240577E-08	*AMF 398					
1080- *AMF 398	1.99309597E-03	-2.42266029E-09	-5.49288970E-09	-6.90151865E-08	*AMF 399					
1081- *AMF 399	2.62935812E-03	-3.05060888E-09	-6.96735469E-09	-8.75492105E-08	*AMF 400					
1082- *AMF 400	4.48845699E-03	-4.88073226E-09	-1.22400863E-08	-9.16047611E-08	*AMF 401					
1083- *AMF 401	6.74488395E-03	-6.68363853E-09	-1.92910790E-08	-7.18515025E-08	*AMF 402					
1084- *AMF 402	6.63008913E-03	-6.36114807E-09	-1.83272881E-08	-7.42361976E-08	*AMF 403					
1085- *AMF 403	8.96172971E-03	-8.21567170E-09	-2.40169484E-08	-6.53843699E-08	*AMF 404					
1086- *AMF 404	1.31673254E-02	-1.04837241E-08	-3.71651545E-08	-4.94548651E-08	*AMF 405					
1087- *AMF 405	1.92134865E-02	-9.84339010E-09	-5.36626743E-08	-2.77809953E-08	*AMF 406					
1088- *AMF 406	4.20496985E-03	-2.65699374E-09	-9.84580950E-09	-8.06666378E-09	*AMF 407					
1089- *AMF 407	3.45005917E-04	-3.18340687E-10	-8.39723180E-10		*AMF 408					
1090- DMI	*MFLC	51	17	2.57716586E-08	*AMF 409					
1091- *AMF 409	-5.64622160E-10	3.33310600E-05	-6.39418379E-11	4.61987852E-08	*AMF 410					
1092- *AMF 410	-2.25887864E-09	1.31603214E-04	-2.48639997E-10	4.52832261E-08	*AMF 411					
1093- *AMF 411	-2.54587554E-09	2.49649398E-04	-4.52803794E-10	5.73352175E-08	*AMF 412					
1094- *AMF 412	-4.90227592E-09	5.84049150E-04	-1.09358944E-09	6.07019501E-08	*AMF 413					
1095- *AMF 413	-7.05274061E-09	1.24706281E-03	-2.13998841E-09	4.80682445E-08	*AMF 414					
1096- *AMF 414	-6.56599042E-09	1.52613828E-03	-2.51198529E-09	4.97054664E-08	*AMF 415					
1097- *AMF 415	-8.28159585E-09	2.72328383E-03	-3.85433552E-09	4.22631459E-08	*AMF 416					
1098- *AMF 416	-5.73455418E-09	6.43364713E-03	-6.94537050E-09	3.15936504E-08	*AMF 417					
1099- *AMF 417	-9.84339010E-09	1.35373771E-02	-9.63540359E-09	1.85176070E-08	*AMF 418					
1100- *AMF 418	-3.91673893E-09	1.50552299E-03	-1.17207621E-09	5.32098454E-09	*AMF 419					

## S O R T E D B U L K D A T A E C H O

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CARD
COUNT . 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
1101- *AMF 419 -4.01757072E-10 2.95450300E-05 -3.39990119E-11 *AMF 420
1102- DMI *MFLD 52 17 -1.42092311E-08 *AMF 421
1103- *AMF 421 -2.22585541E-09 -6.36112968E-11 1.05410618E-06 -2.54773553E-08 *AMF 422
1104- *AMF 422 -5.44170220E-09 -2.44512632E-10 7.95273809E-06 -2.49822563E-08 *AMF 423
1105- *AMF 423 -7.18258519E-09 -4.53194815E-10 2.19494104E-05 -3.17108686E-08 *AMF 424
1106- *AMF 424 -1.22592461E-08 -1.02954845E-09 6.97666401E-05 -3.36156170E-08 *AMF 425
1107- *AMF 425 -1.84342923E-08 -2.10483853E-09 2.15378110E-04 -2.64362612E-08 *AMF 426
1108- *AMF 426 -1.81126651E-08 -2.45121079E-09 3.26437410E-04 -2.74462444E-08 *AMF 427
1109- *AMF 427 -2.44538576E-08 -3.94836519E-09 8.29478493E-04 -2.28770389E-08 *AMF 428
1110- *AMF 428 -3.60762442E-08 -6.96429581E-09 3.44815175E-03 -1.49913362E-08 *AMF 429
1111- *AMF 429 -5.36626743E-08 -9.63540359E-09 1.02085583E-02 -1.03414699E-08 *AMF 430
1112- *AMF 430 -1.14732508E-08 -2.21125940E-09 4.87280777E-04 -2.93798363E-09 *AMF 431
1113- *AMF 431 -5.52437240E-10 -5.50905294E-11 1.79082508E-06 *AMF 432
1114- DMI *MFLC 53 17 4.87715043E-02 *AMF 433
1115- *AMF 433 -2.37181546E-08 1.36033513E-08 -8.87232687E-09 8.74247551E-02 *AMF 434
1116- *AMF 434 -4.21210480E-08 2.91739148E-08 -1.39472078E-08 8.56810212E-02 *AMF 435
1117- *AMF 435 -3.88419954E-08 2.39662583E-08 -1.50818060E-08 1.08648896E-01 *AMF 436
1118- *AMF 436 -5.72598926E-08 2.91214981E-08 -2.03677040E-08 1.14975631E-01 *AMF 437
1119- *AMF 437 -6.25584740E-08 2.93122469E-08 -1.89414600E-08 9.04085636E-02 *AMF 438
1120- *AMF 438 -4.55557716E-08 2.38655216E-08 -1.90147382E-08 9.38442945E-02 *AMF 439
1121- *AMF 439 -4.21239932E-08 3.06580610E-08 -1.67546581E-08 8.08407664E-02 *AMF 440
1122- *AMF 440 -4.24027142E-08 3.09274029E-08 -1.30425093E-08 5.95711507E-02 *AMF 441
1123- *AMF 441 -2.77809953E-08 1.85176070E-08 -1.03414699E-08 5.56784272E-02 *AMF 442
1124- *AMF 442 -1.56546029E-08 1.66091425E-08 -1.34648381E-08 1.38386935E-02 *AMF 443
1125- *AMF 443 -3.74088316E-09 4.94911134E-09 -3.45067219E-09 *AMF 444
1126- DMI *MFLC 54 17 -1.73071726E-08 *AMF 445
1127- *AMF 445 2.63829017E-04 -3.18831184E-10 -7.22054860E-10 -3.10189847E-08 *AMF 446
1128- *AMF 446 6.43279636E-04 -8.08393574E-10 -1.75963133E-09 -3.02533927E-08 *AMF 447
1129- *AMF 447 8.47022049E-04 -1.03278830E-09 -2.24361152E-09 -3.83290164E-08 *AMF 448
1130- *AMF 448 1.44083472E-03 -1.68324887E-09 -3.92647337E-09 -4.01236449E-08 *AMF 449
1131- *AMF 449 2.14907899E-03 -2.37547115E-09 -6.13831475E-09 -3.14031396E-08 *AMF 450
1132- *AMF 450 2.05199055E-03 -2.36726794E-09 -5.77038506E-09 -3.23233991E-08 *AMF 451
1133- *AMF 451 2.77568330E-03 -3.06215608E-09 -7.40768513E-09 -2.77003878E-08 *AMF 452
1134- *AMF 452 3.83357145E-03 -4.14400603E-09 -1.06984359E-08 -1.94674143E-08 *AMF 453
1135- *AMF 453 4.20496985E-03 -3.91673893E-09 -1.14732508E-08 -1.56546029E-08 *AMF 454
1136- *AMF 454 9.77132842E-03 -4.09773548E-09 -2.26942589E-08 -4.63958472E-09 *AMF 455
1137- *AMF 455 5.91920685E-04 -5.19720933E-10 -1.42372704E-09 *AMF 456
1138- DMI *MFLD 55 17 1.70859380E-08 *AMF 457
1139- *AMF 457 -2.56703991E-10 5.08826543E-06 -9.95774557E-12 3.06247543E-08 *AMF 458
1140- *AMF 458 -6.17527363E-10 2.00888899E-05 -3.94244359E-11 3.00088097E-08 *AMF 459
1141- *AMF 459 -7.59805555E-10 3.81000718E-05 -7.31565780E-11 3.80254939E-08 *AMF 460
1142- *AMF 460 -1.34101064E-09 8.90953816E-05 -1.79705834E-10 4.02103630E-08 *AMF 461
1143- *AMF 461 -1.58150140E-09 1.90035018E-04 -3.65947050E-10 3.16394555E-08 *AMF 462
1144- *AMF 462 -1.84310012E-09 2.31530721E-04 -4.41630066E-10 3.27563079E-08 *AMF 463
1145- *AMF 463 -2.35376407E-09 4.08952590E-04 -7.29233118E-10 2.79201764E-08 *AMF 464
1146- *AMF 464 -2.83700463E-09 5.79896169E-04 -1.57746260E-09 2.02312407E-08 *AMF 465
1147- *AMF 465 -2.65699374E-09 1.50552299E-03 -2.21125940E-09 1.66091425E-08 *AMF 466
1148- *AMF 466 -4.09773548E-09 6.95790350E-03 -1.26323461E-09 4.81361795E-09 *AMF 467
1149- *AMF 467 -5.16372722E-10 8.77554994E-05 -9.41036415E-11 *AMF 468
1150- DMI *MFLD 56 17 -1.37417686E-08 *AMF 469
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## S O R T E D B U L K D A T A E C H O

## CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
1151- *AMF	469	-6.14105655E-10	-6.61268696E-12	4.73843684E-08	-2.46325058E-08	*AMF	470			
1152- *AMF	470	-1.49737978E-09	-2.58035399E-11	3.57091494E-07	-2.41408102E-08	*AMF	471			
1153- *AMF	471	-1.57180827E-09	-4.84539492E-11	9.84825419E-07	-3.06111616E-08	*AMF	472			
1154- *AMF	472	-3.35408346E-09	-1.11939125E-10	3.12051543E-06	-3.23908793E-08	*AMF	473			
1155- *AMF	473	-5.00332575E-09	-2.34710251E-10	9.53850849E-06	-2.54653081E-08	*AMF	474			
1156- *AMF	474	-4.87006702E-09	-2.80919288E-10	1.41173559E-05	-2.64237592E-08	*AMF	475			
1157- *AMF	475	-6.46045351E-09	-4.75950834E-10	3.67109751E-05	-2.26523298E-08	*AMF	476			
1159- *AMF	476	-8.93220076E-09	-9.10606035E-10	2.30406979E-04	-1.65176779E-08	*AMF	477			
1159- *AMF	477	-5.84580950E-09	-1.17207621E-09	4.87280777E-04	-1.34648381E-08	*AMF	478			
1160- *AMF	478	-2.26942589E-08	-1.26325461E-09	5.19867986E-03	-3.89532318E-09	*AMF	479			
1161- *AMF	479	-1.37655531E-09	-9.91460941E-11	1.03454895E-05		*AMF	480			
1162- DMI	*MFLD		57	17		1.36823319E-02	*AMF	481		
1163- *AMF	481	-6.67433397E-09	3.81682952E-09	-2.48904386E-09	2.45257393E-02	*AMF	482			
1164- *AMF	482	-1.18663156E-08	8.18649326E-09	-3.91272437E-09	2.40357630E-02	*AMF	483			
1165- *AMF	483	-1.09618661E-08	6.72729428E-09	-4.23095514E-09	3.04769464E-02	*AMF	484			
1166- *AMF	484	-1.61736082E-08	8.17850676E-09	-5.71368375E-09	3.22471745E-02	*AMF	485			
1167- *AMF	485	-1.77236288E-08	8.24183388E-09	-5.31363398E-09	2.53528021E-02	*AMF	486			
1168- *AMF	486	-1.29456197E-08	8.40017478E-09	-5.33387379E-09	2.63085254E-02	*AMF	487			
1169- *AMF	487	-1.20244614E-08	8.63915517E-09	-4.70138772E-09	2.26350315E-02	*AMF	488			
1170- *AMF	488	-1.21701191E-08	8.76577388E-09	-3.67908126E-09	1.65934972E-02	*AMF	489			
1171- *AMF	489	-8.06666378E-09	5.32098454E-09	-2.93798363E-09	1.38386935E-02	*AMF	490			
1172- *AMF	490	-4.63958472E-09	4.81361795E-09	-3.89532318E-09	6.31405786E-03	*AMF	491			
1173- *AMF	491	-1.54952225E-09	2.22508767E-09	-1.56711200E-09		*AMF	492			
1174- DMI	*MFLD		58	17		-3.94229716E-09	*AMF	493		
1175- *AMF	493	2.26127152E-05	-2.75938994E-11	-6.18866763E-11	-7.06620540E-09	*AMF	494			
1176- *AMF	494	5.51326375E-05	-7.03365144E-11	-1.50809615E-10	-6.91245106E-09	*AMF	495			
1177- *AMF	495	7.25853024E-05	-9.04990805E-11	-1.92265218E-10	-8.76195116E-09	*AMF	496			
1178- *AMF	496	1.23442864E-04	-1.48873192E-10	-3.36398909E-10	-9.23344956E-09	*AMF	497			
1179- *AMF	497	1.84029137E-04	-2.13350587E-10	-5.25636645E-10	-7.24679339E-09	*AMF	498			
1180- *AMF	498	1.79022070E-04	-2.14674806E-10	-4.93805219E-10	-7.49671258E-09	*AMF	499			
1181- *AMF	499	2.37225700E-04	-2.83045809E-10	-6.33116670E-10	-6.43795772E-09	*AMF	500			
1182- *AMF	500	3.26184789E-04	-4.03394429E-10	-9.10369113E-10	-4.64261873E-09	*AMF	501			
1183- *AMF	501	3.49005917E-04	-4.01757072E-10	-9.52437240E-10	-3.74088316E-09	*AMF	502			
1184- *AMF	502	5.91920689E-04	-5.16372722E-10	-1.37655531E-09	-1.54985225E-09	*AMF	503			
1185- *AMF	503	5.31284371E-04	-4.30362190E-10	-1.27499278E-09		*AMF	504			
1186- DMI	*MFLC		59	17		4.92929786E-09	*AMF	505		
1187- *AMF	505	-2.24502500E-11	1.04769924E-07	-2.07032958E-13	8.83577300E-09	*AMF	506			
1188- *AMF	506	-5.45624934E-11	4.13636940E-07	-8.22092665E-13	8.65914629E-09	*AMF	507			
1189- *AMF	507	-7.15590642E-11	7.84471183E-07	-1.53274268E-12	1.09790825E-08	*AMF	508			
1190- *AMF	508	-1.21294905E-10	1.83435077E-06	-3.78140574E-12	1.16161907E-08	*AMF	509			
1191- *AMF	509	-1.79821602E-10	3.91203594E-06	-7.77896410E-12	9.13310672E-09	*AMF	510			
1192- *AMF	510	-1.73763531E-10	4.76358309E-06	-9.44957394E-12	9.47564160E-09	*AMF	511			
1193- *AMF	511	-2.28371974E-10	8.40296889E-06	-1.59229574E-11	8.14641865E-09	*AMF	512			
1194- *AMF	512	-3.05420356E-10	2.01707153E-05	-3.82129051E-11	5.96557470E-09	*AMF	513			
1195- *AMF	513	-3.18340687E-10	2.95450300E-05	-5.50905294E-11	4.94911134E-09	*AMF	514			
1196- *AMF	514	-5.19720933E-10	8.77554994E-05	-9.91460941E-11	2.22508767E-09	*AMF	515			
1197- *AMF	515	-4.30362190E-10	1.24267157E-04	-1.16318705E-10		*AMF	516			
1198- DMI	*MFLD		60	17		-3.41605655E-09	*AMF	517		
1199- *AMF	517	-5.43918244E-11	-1.31680962E-13	1.70598827E-10	-6.12331874E-09	*AMF	518			
1200- *AMF	518	-1.32615308E-10	-5.17185253E-13	1.28512312E-09	-6.00098460E-09	*AMF	519			

S O R T E D B U L K D A T A E C H O

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1201- *AMF	519	-1.74557475E-10	-9.77044834E-13	3.54329699E-09	-7.60914531E-09	*AMF	520				
1202- *AMF	520	-2.96931146E-10	-2.27803540E-12	1.12147021E-08	-8.05110645E-09	*AMF	521				
1203- *AMF	521	-4.42669679E-10	-4.84187430E-12	3.41575372E-08	-6.32978470E-09	*AMF	522				
1204- *AMF	522	-4.30625313E-10	-5.87816341E-12	5.01115096E-08	-6.56836363E-09	*AMF	523				
1205- *AMF	523	-5.70626879E-10	-1.02938933E-11	1.31430738E-07	-5.65076519E-09	*AMF	524				
1206- *AMF	524	-7.84649901E-10	-2.37194847E-11	9.26412497E-07	-4.14190282E-09	*AMF	525				
1207- *AMF	525	-8.35723180E-10	-3.39990119E-11	1.79082508E-06	-3.45067219E-09	*AMF	526				
1208- *AMF	526	-1.42372714E-09	-9.41036415E-11	1.03454895E-05	-1.56711200E-09	*AMF	527				
1209- *AMF	527	-1.27499278E-09	-1.16318705E-10	2.50539888E-05		*AMF	528				
1210- DMI	*MFLC		85	85	1.10990047E-01	*AMF	529				
1211- *AMF	529	-4.21801438E-08	2.80300760E-08	-7.66209141E-09	1.19999528E-01	*AMF	530				
1212- *AMF	530	-5.91455738E-08	3.78323861E-08	-2.14871108E-08	1.19519413E-01	*AMF	531				
1213- *AMF	531	-5.99346777E-08	3.98502884E-08	-1.97337258E-08	1.19499981E-01	*AMF	532				
1214- *AMF	532	-6.02237265E-08	3.88276682E-08	-2.07045829E-08	8.33081603E-02	*AMF	533				
1215- *AMF	533	-4.27322391E-08	2.78155632E-08	-1.54645434E-08	4.90845889E-02	*AMF	534				
1216- *AMF	534	-2.51060257E-08	1.43328194E-08	-9.34655020E-09	6.15712553E-02	*AMF	535				
1217- *AMF	535	-3.17995301E-08	2.01364259E-08	-1.06780078E-08	4.49862964E-02	*AMF	536				
1218- *AMF	536	-2.23153833E-08	1.24570327E-08	-7.34058148E-09	2.72853412E-02	*AMF	537				
1219- *AMF	537	-1.22757484E-08	8.10435807E-09	-5.34357270E-09	2.61024237E-02	*AMF	538				
1220- *AMF	538	-1.41714551E-08	6.65346889E-09	-4.55835192E-09	1.23995692E-02	*AMF	539				
1221- *AMF	539	-6.04721961E-09	3.59877705E-09	-2.58110711E-09		*AMF	540				
1222- DMI	*MFLC		86	85	-4.21801438E-08	*AMF	541				
1223- *AMF	541	3.29014249E-02	-1.76966779E-08	-9.28996542E-08	-5.69427208E-08	*AMF	542				
1224- *AMF	542	5.26887551E-03	-6.29664854E-09	-1.41663925E-08	-5.85070765E-08	*AMF	543				
1225- *AMF	543	6.85506298E-04	-7.82378162E-10	-1.90760074E-09	-5.87319029E-08	*AMF	544				
1226- *AMF	544	8.70815857E-05	-1.18088192E-10	-2.32776659E-10	-4.09660394E-08	*AMF	545				
1227- *AMF	545	8.78717765E-06	-9.85099849E-12	-2.43436660E-11	-2.41381066E-08	*AMF	546				
1228- *AMF	546	2.25725447E-06	-2.72581437E-12	-6.17906854E-12	-3.02792778E-08	*AMF	547				
1229- *AMF	547	1.28012016E-06	-1.53419898E-12	-3.50364009E-12	-2.21234018E-08	*AMF	548				
1230- *AMF	548	3.77952176E-07	-4.72911424E-13	-1.00787434E-12	-1.34184042E-08	*AMF	549				
1231- *AMF	549	1.90437561E-07	-2.27673132E-13	-5.46309905E-13	-1.28367077E-08	*AMF	550				
1232- *AMF	550	1.10556357E-07	-1.37193479E-13	-3.00847997E-13	-6.09790263E-09	*AMF	551				
1233- *AMF	551	2.28784103E-08	-2.94997825E-14	-6.18741169E-14		*AMF	552				
1234- DMI	*MFLC		87	85	2.80300760E-08	*AMF	553				
1235- *AMF	553	-1.76966779E-08	2.30245739E-02	-1.82510647E-08	3.99150615E-08	*AMF	554				
1236- *AMF	554	-6.22580743E-09	2.14472253E-04	-1.89757587E-09	3.98046431E-08	*AMF	555				
1237- *AMF	555	-7.62196528E-10	8.18265835E-05	7.15737608E-11	3.98354807E-08	*AMF	556				
1238- *AMF	556	-1.16041690E-10	-9.39079746E-06	-2.06788614E-11	2.77680385E-08	*AMF	557				
1239- *AMF	557	-9.70936439E-12	1.04006085E-06	3.61412636E-12	1.63609322E-08	*AMF	558				
1240- *AMF	558	-2.62765504E-12	1.91470008E-07	9.40841914E-14	2.05230677E-08	*AMF	559				
1241- *AMF	559	-1.51670863E-12	6.46339231E-08	-3.54167887E-14	1.49949493E-08	*AMF	560				
1242- *AMF	560	-4.61147071E-13	8.55937188E-09	-1.62246044E-14	9.09481912E-09	*AMF	561				
1243- *AMF	561	-2.33496707E-13	3.55264884E-09	-7.97258242E-15	8.70052830E-09	*AMF	562				
1244- *AMF	562	-1.38966583E-13	1.14201804E-09	-3.91459326E-15	4.13305656E-09	*AMF	563				
1245- *AMF	563	-2.99527316E-14	4.31160802E-11	-9.69502688E-16		*AMF	564				
1246- DMI	*MFLC		88	85	-7.66209141E-09	*AMF	565				
1247- *AMF	565	-5.28996542E-08	-1.82510647E-08	1.63405836E-02	-1.85553226E-08	*AMF	566				
1248- *AMF	566	-1.43000989E-08	-1.87278193E-09	-8.92708311E-04	-1.79294517E-08	*AMF	567				
1249- *AMF	567	-1.90755212E-09	7.31351923E-11	1.40678618E-04	-1.80198008E-08	*AMF	568				
1250- *AMF	568	-2.34791075E-10	-2.03978223E-11	-2.36241613E-05	-1.25510553E-08	*AMF	569				



EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1251- *AMF	569	-2.46623139E-11	3.49567163E-12	3.43904594E-06	-7.39594697E-09	*AMF	570				
1252- *AMF	570	-6.33936393E-12	1.04148840E-13	2.91075708E-07	-9.27759913E-09	*AMF	571				
1253- *AMF	571	-3.50489082E-12	-2.96292735E-14	5.98943757E-08	-6.77859191E-09	*AMF	572				
1254- *AMF	572	-1.03087591E-12	-1.52655768E-14	2.11243267E-09	-4.11138856E-09	*AMF	573				
1255- *AMF	573	-5.19127005E-13	-7.41677295E-15	4.71042316E-10	-3.93314536E-09	*AMF	574				
1255- *AMF	574	-3.00264754E-13	-3.40285386E-15	-9.81833087E-11	-1.86838300E-09	*AMF	575				
1257- *AMF	575	-6.16723469E-14	-6.52249251E-16	-1.53741048E-11		*AMF	576				
1258- DMI	*MFLC		89	85	1.19999528E-01	*AMF	577				
1259- *AMF	577	-5.69427208E-08	3.99150615E-08	-1.85553226E-08	5.22863805E-01	*AMF	578				
1260- *AMF	578	-2.41927239E-07	1.50642279E-07	-7.82019924E-08	4.94519293E-01	*AMF	579				
1261- *AMF	579	-2.46093578E-07	1.64957839E-07	-8.25501161E-08	4.93000507E-01	*AMF	580				
1262- *AMF	580	-2.48214405E-07	1.60126149E-07	-8.52694484E-08	3.43633831E-01	*AMF	581				
1263- *AMF	581	-1.76240064E-07	1.14740146E-07	-6.38087272E-08	2.02464402E-01	*AMF	582				
1264- *AMF	582	-1.03551258E-07	5.91210672E-08	-3.85544006E-08	2.53968835E-01	*AMF	583				
1265- *AMF	583	-1.31163063E-07	8.30589215E-08	-4.40449561E-08	1.85559154E-01	*AMF	584				
1266- *AMF	584	-9.20452976E-08	5.13827345E-08	-3.02783967E-08	1.12546384E-01	*AMF	585				
1267- *AMF	585	-5.06344087E-08	3.34288295E-08	-2.20411458E-08	1.07667089E-01	*AMF	586				
1268- *AMF	586	-5.64540203E-08	2.74441874E-08	-1.88022611E-08	5.11456542E-02	*AMF	587				
1269- *AMF	587	-2.49434677E-08	1.48442076E-08	-1.06465308E-08		*AMF	588				
1270- DMI	*MFLC		90	85	-5.91455738E-08	*AMF	589				
1271- *AMF	589	5.26887551E-03	-6.22580743E-09	-1.43000989E-08	-2.41927239E-07	*AMF	590				
1272- *AMF	590	6.21655583E-02	-3.87406658E-08	-1.72183832E-07	-2.48962749E-07	*AMF	591				
1273- *AMF	591	7.54402578E-03	-9.28747212E-09	-2.04605577E-08	-2.50752407E-07	*AMF	592				
1274- *AMF	592	9.55789583E-04	-1.08175069E-09	-2.62336064E-09	-1.75019011E-07	*AMF	593				
1275- *AMF	593	9.57088341E-05	-1.27310315E-10	-2.55705457E-10	-1.03132095E-07	*AMF	594				
1276- *AMF	594	2.45672739E-05	-3.33130745E-11	-6.63812200E-11	-1.29374826E-07	*AMF	595				
1277- *AMF	595	1.38598594E-05	-1.78592280E-11	-3.79127146E-11	-9.45283887E-08	*AMF	596				
1278- *AMF	596	4.10285247E-06	-5.26108324E-12	-1.09588640E-11	-5.73338568E-08	*AMF	597				
1279- *AMF	597	2.06714139E-06	-2.51478526E-12	-5.94600497E-12	-5.48486341E-08	*AMF	598				
1290- *AMF	598	1.15992819E-06	-1.48997134E-12	-3.28028403E-12	-2.60552078E-08	*AMF	599				
1281- *AMF	599	2.48316456E-07	-3.09382186E-13	-6.79961729E-13		*AMF	600				
1282- DMI	*MFLD		91	85	3.78323861E-08	*AMF	601				
1283- *AMF	601	-6.29664854E-09	2.14472253E-04	-1.87278193E-09	1.50642279E-07	*AMF	602				
1294- *AMF	602	-3.87406658E-08	3.74060906E-02	-3.29982299E-08	1.56190993E-07	*AMF	603				
1285- *AMF	603	-9.17099641E-09	1.46620572E-04	-2.05876005E-09	1.55731243E-07	*AMF	604				
1286- *AMF	604	-1.06738351E-09	1.11468209E-04	6.93406305E-11	1.08580991E-07	*AMF	605				
1287- *AMF	605	-1.27212976E-10	-8.86682665E-06	-1.90022442E-11	6.39727205E-08	*AMF	606				
1289- *AMF	606	-3.25240390E-11	-1.66949030E-06	2.02273799E-13	8.02460249E-08	*AMF	607				
1289- *AMF	607	-1.77303311E-11	-5.69178667E-07	4.97855500E-13	5.86306115E-08	*AMF	608				
1290- *AMF	608	-5.17096695E-12	-7.55055112E-08	1.19739396E-13	3.55609551E-08	*AMF	609				
1291- *AMF	609	-2.59969477E-12	-3.14192015E-08	4.94124361E-14	3.40192550E-08	*AMF	610				
1292- *AMF	610	-1.502888850E-12	-1.01642605E-08	1.49080272E-14	1.61603353E-08	*AMF	611				
1293- *AMF	611	-3.14913297E-13	-3.81521925E-10	-2.46313136E-15		*AMF	612				
1294- DMI	*MFLC		92	85	-2.14871108E-08	*AMF	613				
1295- *AMF	613	-1.41663925E-08	-1.89757587E-09	-8.92708311E-04	-7.82019924E-08	*AMF	614				
1296- *AMF	614	-1.72183832E-07	-3.29982299E-08	2.50017121E-02	-8.71268639E-08	*AMF	615				
1297- *AMF	615	-2.03446362E-08	-2.09996798E-09	-1.08905463E-03	-8.61423928E-08	*AMF	616				
1298- *AMF	616	-2.62405764E-09	7.12849640E-11	1.76804606E-04	-6.01259558E-08	*AMF	617				
1299- *AMF	617	-2.56046561E-10	-1.88404570E-11	-2.25027034E-05	-3.54191485E-08	*AMF	618				
1300- *AMF	618	-6.74713341E-11	8.12483761E-14	-1.92699463E-06	-4.44280879E-08	*AMF	619				

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
1301-	*AMF	619	-3.77154002E-11	4.45295439E-13	-3.94021470E-07	-3.24606617E-08	*AMF	620			
1302-	*AMF	620	-1.11362300E-11	1.16619388E-13	-1.41816656E-08	-1.96882191E-08	*AMF	621			
1303-	*AMF	621	-5.61097349E-12	5.05918481E-14	-3.24659521E-09	-1.88346618E-08	*AMF	622			
1304-	*AMF	622	-3.25213207E-12	1.61593727E-14	5.95379968E-10	-8.94712571E-09	*AMF	623			
1305-	*AMF	623	-6.70751540E-13	-1.68464583E-15	9.72937564E-11		*AMF	624			
1306-	DMI	*MFLD		93		85		1.19519413E-01	*AMF	625	
1307-	*AMF	625	-5.85070765E-08	3.98046431E-08	-1.79294517E-08	4.94519293E-01	*AMF	626			
1308-	*AMF	626	-2.48962749E-07	1.56190993E-07	-8.71268639E-08	8.67724359E-01	*AMF	627			
1309-	*AMF	627	-4.12212785E-07	2.73850276E-07	-1.29475950E-07	8.34789574E-01	*AMF	628			
1310-	*AMF	628	-4.18062314E-07	2.71208592E-07	-1.45210151E-07	5.80755532E-01	*AMF	629			
1311-	*AMF	629	-2.57628560E-07	1.93875564E-07	-1.07739027E-07	3.42133164E-01	*AMF	630			
1312-	*AMF	630	-1.74926811E-07	9.98982728E-08	-6.51419896E-08	4.29155171E-01	*AMF	631			
1313-	*AMF	631	-2.21606058E-07	1.40350267E-07	-7.44251452E-08	3.13554883E-01	*AMF	632			
1314-	*AMF	632	-1.85527061E-07	8.68253665E-08	-5.11638767E-08	1.90178871E-01	*AMF	633			
1315-	*AMF	633	-8.55562803E-08	5.64873233E-08	-3.72447282E-08	1.81933761E-01	*AMF	634			
1316-	*AMF	634	-5.87716362E-08	4.63746197E-08	-3.17717017E-08	8.64248276E-02	*AMF	635			
1317-	*AMF	635	-4.21483826E-08	2.50834411E-08	-1.79902919E-08		*AMF	636			
1318-	DMI	*MFLD		94		85		-5.99346777E-08	*AMF	637	
1319-	*AMF	637	6.85506298E-04	-7.62196528E-10	-1.90755212E-09	-2.46093578E-07	*AMF	638			
1320-	*AMF	638	7.54402578E-03	-9.17099641E-09	-2.03446362E-08	-4.12212785E-07	*AMF	639			
1321-	*AMF	639	6.31819963E-02	-4.14829948E-08	-1.76356991E-07	-4.17382751E-07	*AMF	640			
1322-	*AMF	640	7.31279328E-03	-9.13402332E-09	-1.97219627E-08	-2.92187337E-07	*AMF	641			
1323-	*AMF	641	7.33913155E-04	-8.24899926E-10	-2.00433470E-09	-1.72234309E-07	*AMF	642			
1324-	*AMF	642	1.91509767E-04	-2.28147945E-10	-5.13075804E-10	-2.16097476E-07	*AMF	643			
1325-	*AMF	643	1.06659805E-04	-1.27696381E-10	-2.91820568E-10	-1.57905561E-07	*AMF	644			
1326-	*AMF	644	3.14859202E-05	-3.90153049E-11	-8.42214631E-11	-9.57733732E-08	*AMF	645			
1327-	*AMF	645	1.58639741E-05	-1.86995280E-11	-4.57060362E-11	-9.16242584E-08	*AMF	646			
1328-	*AMF	646	9.20898765E-06	-1.11921080E-11	-2.52314142E-11	-4.35261036E-08	*AMF	647			
1329-	*AMF	647	1.50567571E-06	-2.32288494E-12	-5.25068617E-12		*AMF	648			
1330-	DMI	*MFLD		95		85		3.98502884E-08	*AMF	649	
1331-	*AMF	649	-7.82378162E-10	8.18265835E-05	7.31351923E-11	1.64957839E-07	*AMF	650			
1332-	*AMF	650	-9.28747212E-09	1.46620572E-04	-2.09996798E-09	2.73850276E-07	*AMF	651			
1333-	*AMF	651	-4.14829948E-08	3.78897749E-02	-3.24588321E-08	2.78555547E-07	*AMF	652			
1334-	*AMF	652	-9.13808407E-09	9.13957865E-06	-1.96810990E-09	1.93752783E-07	*AMF	653			
1335-	*AMF	653	-8.34589731E-10	8.26093747E-05	7.08124670E-11	1.14160002E-07	*AMF	654			
1336-	*AMF	654	-2.25392038E-10	1.43072175E-05	-7.79461305E-12	1.43201646E-07	*AMF	655			
1337-	*AMF	655	-1.29170397E-10	4.69353836E-06	-5.35232362E-12	1.04629066E-07	*AMF	656			
1338-	*AMF	656	-3.88200583E-11	6.18402964E-07	-1.10045046E-12	6.34602202E-08	*AMF	657			
1339-	*AMF	657	-1.96210409E-11	2.54736449E-07	-4.71456207E-13	6.07089419E-08	*AMF	658			
1340-	*AMF	658	-1.14839813E-11	8.03248668E-08	-1.72256198E-13	2.88389046E-08	*AMF	659			
1341-	*AMF	659	-2.39469122E-12	3.08606873E-09	-1.28683515E-14		*AMF	660			
1342-	DMI	*MFLD		96		85		-1.97337258E-08	*AMF	661	
1343-	*AMF	661	-1.50760074E-09	7.15737608E-11	1.40678618E-04	-8.25501161E-08	*AMF	662			
1344-	*AMF	662	-2.04605577E-08	-2.05876005E-09	-1.08905463E-03	-1.29475950E-07	*AMF	663			
1345-	*AMF	663	-1.76356991E-07	-3.24588321E-08	2.52847485E-02	-1.39040878E-07	*AMF	664			
1346-	*AMF	664	-1.97977315E-08	-1.94631666E-09	-1.17256818E-03	-9.61876481E-08	*AMF	665			
1347-	*AMF	665	-2.02578190E-09	6.51151355E-11	1.41181008E-04	-5.67048346E-08	*AMF	666			
1348-	*AMF	666	-5.25425703E-10	-7.30554679E-12	1.25719462E-05	-7.11359576E-08	*AMF	667			
1349-	*AMF	667	-2.91523250E-10	-5.04441194E-12	2.50958055E-06	-5.19753307E-08	*AMF	668			
1350-	*AMF	668	-8.55610161E-11	-1.06984040E-12	9.87653266E-08	-3.15243582E-08	*AMF	669			

SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
1351- *AMF	669	-4.33031527E-11	-4.69361312E-13	2.44886884E-08	-3.01576435E-08	*AMF	670			
1352- *AMF	670	-2.51281634E-11	-1.70017212E-13	-2.76859491E-09	-1.43259307E-08	*AMF	671			
1353- *AMF	671	-5.15636764E-12	-1.10831110E-14	-5.23982413E-10				*AMF	672	
1354- DMI	*MFLC		97		85			1.19499981E-01	*AMF	673
1355- *AMF	673	-5.87319029E-08	3.98354807E-08	-1.80198008E-08	4.93000507E-01	*AMF	674			
1355- *AMF	674	-2.50752407E-07	1.55731243E-07	-8.61423928E-08	8.34789574E-01	*AMF	675			
1357- *AMF	675	-4.17382751E-07	2.78555547E-07	-1.39040878E-07	1.21067142E	00*AMF	676			
1359- *AMF	676	-5.84042652E-07	3.79498317E-07	-1.95260952E-07	8.21061492E-01	*AMF	677			
1359- *AMF	677	-4.18745515E-07	2.74070487E-07	-1.52929715E-07	4.82982993E-01	*AMF	678			
1360- *AMF	678	-2.46425145E-07	1.41031080E-07	-9.20170464E-08	6.05616570E-01	*AMF	679			
1361- *AMF	679	-3.12443035E-07	1.98063844E-07	-1.05038737E-07	4.42449629E-01	*AMF	680			
1362- *AMF	680	-2.19377000E-07	1.22517747E-07	-7.21964852E-08	2.68354297E-01	*AMF	681			
1363- *AMF	681	-1.20683239E-07	7.97073767E-08	-5.25547605E-08	2.56716669E-01	*AMF	682			
1364- *AMF	682	-1.39346866E-07	6.54367227E-08	-4.48312889E-08	1.21948540E-01	*AMF	683			
1365- *AMF	683	-5.54678156E-08	3.53936223E-08	-2.53849350E-08				*AMF	684	
1366- DMI	*MFLC		98		85			-6.02237265E-08	*AMF	685
1367- *AMF	685	-6.70815857E-05	-1.16041690E-10	-2.34791075E-10	-2.48214405E-07	*AMF	686			
1368- *AMF	686	-5.55789583E-04	-1.06738351E-09	-2.62405764E-09	-4.18062314E-07	*AMF	687			
1369- *AMF	687	-7.31279328E-03	-9.13808407E-09	-1.97977315E-08	-5.84042652E-07	*AMF	688			
1370- *AMF	688	-6.33646250E-02	-4.07421190E-08	-1.76099036E-07	-4.11586427E-07	*AMF	689			
1371- *AMF	689	-5.85955009E-03	-7.02858571E-09	-1.57049556E-08	-2.42937631E-07	*AMF	690			
1372- *AMF	690	-1.49113592E-03	-1.88130644E-09	-3.96821420E-09	-3.05054073E-07	*AMF	691			
1373- *AMF	691	-8.21882160E-04	-1.02271303E-09	-2.24360375E-09	-2.23001507E-07	*AMF	692			
1374- *AMF	692	-2.41915026E-04	-3.04758885E-10	-6.47051079E-10	-1.35252492E-07	*AMF	693			
1375- *AMF	693	-1.21786055E-04	-1.45618656E-10	-3.50944385E-10	-1.29410921E-07	*AMF	694			
1376- *AMF	694	-7.06102583E-05	-8.64363719E-11	-1.93566871E-10	-6.14849114E-08	*AMF	695			
1377- *AMF	695	-1.46143775E-05	-1.77621806E-11	-4.03244521E-11				*AMF	696	
1378- DMI	*MFLC		99		85			3.88276682E-08	*AMF	697
1379- *AMF	697	-1.18088192E-10	-9.39079746E-06	-2.03978223E-11	1.60126149E-07	*AMF	698			
1380- *AMF	698	-1.08175069E-09	1.11468209E-04	7.12849640E-11	2.71208592E-07	*AMF	699			
1381- *AMF	699	-5.13402332E-09	9.13957865E-06	-1.94631666E-09	3.79498317E-07	*AMF	700			
1382- *AMF	700	-4.07421190E-08	3.79550047E-02	-3.25723448E-08	2.66656684E-07	*AMF	701			
1383- *AMF	701	-7.11634485E-09	2.07493082E-04	-1.85315185E-09	1.56912961E-07	*AMF	702			
1384- *AMF	702	-1.85932469E-09	5.10600421E-06	-1.47186638E-10	1.96758492E-07	*AMF	703			
1385- *AMF	703	-1.03070019E-09	-3.28895112E-06	-2.02111661E-11	1.43746433E-07	*AMF	704			
1386- *AMF	704	-3.03079117E-10	-5.51770597E-07	4.96567644E-14	8.71849579E-08	*AMF	705			
1387- *AMF	705	-1.52600252E-10	-3.00384897E-07	2.89412483E-13	8.34040179E-08	*AMF	706			
1388- *AMF	706	-8.84574775E-11	-1.54075906E-07	2.94853063E-13	3.96195219E-08	*AMF	707			
1389- *AMF	707	-1.82950460E-11	-3.84627086E-09	4.14099500E-15				*AMF	708	
1390- DMI	*MFLC		100		85			-2.07045829E-08	*AMF	709
1391- *AMF	709	-2.32776655E-10	-2.06788614E-11	-2.36241613E-05	-8.52694484E-08	*AMF	710			
1392- *AMF	710	-2.62336064E-09	6.93406305E-11	1.76804606E-04	-1.45210151E-07	*AMF	711			
1393- *AMF	711	-1.97219627E-08	-1.96810990E-09	-1.17256818E-03	-1.95260952E-07	*AMF	712			
1394- *AMF	712	-1.76099036E-07	-3.25723448E-08	2.53424495E-02	-1.42659758E-07	*AMF	713			
1395- *AMF	713	-1.57846145E-08	-1.81881399E-09	-8.76411097E-04	-8.36799359E-08	*AMF	714			
1396- *AMF	714	-4.04091338E-09	-1.48068072E-10	-8.32610240E-05	-1.04872527E-07	*AMF	715			
1397- *AMF	715	-2.22438090E-09	-2.09658541E-11	-1.63196382E-05	-7.66106609E-08	*AMF	716			
1398- *AMF	716	-6.58181953E-10	2.98864767E-14	-6.33008995E-07	-4.64659764E-08	*AMF	717			
1399- *AMF	717	-3.31384475E-10	2.86437974E-13	-1.72288082E-07	-4.44506227E-08	*AMF	718			
1400- *AMF	718	-1.92126287E-10	2.97913007E-13	4.78508966E-09	-2.11154507E-08	*AMF	719			

## S O R T E D B U L K D A T A E C H O

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CARD
COUNT.  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  .. 10  .
1401-*AMF 719 -3.9759778E-11  6.30871494E-15  2.95487701E-09                *AMF 720
1402-DMI      *MFLD                101                85                8.33081603E-02 *AMF 721
1403-*AMF 721 -4.05660394E-08  2.77680385E-08 -1.25510553E-08  3.43633831E-01*AMF 722
1404-*AMF 722 -1.75019011E-07  1.08580991E-07 -6.01259558E-08  5.80755532E-01*AMF 723
1405-*AMF 723 -2.92187337E-07  1.93752783E-07 -9.61876481E-08  8.21061492E-01*AMF 724
1406-*AMF 724 -4.11586427E-07  2.66656684E-07 -1.42659758E-07  7.56516874E-01*AMF 725
1407-*AMF 725 -3.73867181E-07  2.42510225E-07 -1.31891625E-07  4.35583711E-01*AMF 726
1408-*AMF 726 -2.19340450E-07  1.25656811E-07 -8.20970172E-08  5.43552399E-01*AMF 727
1409-*AMF 727 -2.78854088E-07  1.77297352E-07 -9.41106464E-08  3.96711290E-01*AMF 728
1410-*AMF 728 -1.96239455E-07  1.09791529E-07 -6.47242473E-08  2.40584612E-01*AMF 729
1411-*AMF 729 -1.07563842E-07  7.14345560E-08 -4.71137653E-08  2.30114400E-01*AMF 730
1412-*AMF 730 -1.24773464E-07  5.86485385E-08 -4.01856681E-08  1.09302938E-01*AMF 731
1413-*AMF 731 -5.32735953E-08  3.17231468E-08 -2.27526264E-08                *AMF 732
1414-DMI      *MFLC                102                85                -4.27322391E-08 *AMF 733
1415-*AMF 733  8.78717765E-06 -9.70936439E-12 -2.46623139E-11 -1.76240064E-07*AMF 734
1416-*AMF 734  9.57088341E-05 -1.27212976E-10 -2.56046961E-10 -2.97628560E-07*AMF 735
1417-*AMF 735  7.33913155E-04 -8.34589731E-10 -2.02978190E-09 -4.18745515E-07*AMF 736
1418-*AMF 736  5.85955009E-03 -7.11634485E-09 -1.57846145E-08 -3.73867181E-07*AMF 737
1419-*AMF 737  3.43423486E-02 -2.03014068E-08 -9.55819814E-08 -2.20073332E-07*AMF 738
1420-*AMF 738  8.36516917E-03 -7.21446725E-09 -2.26056365E-08 -2.77057950E-07*AMF 739
1421-*AMF 739  4.53599170E-03 -4.59950655E-09 -1.24464776E-08 -2.02962497E-07*AMF 740
1422-*AMF 740  1.32873119E-03 -1.53725987E-09 -3.55743768E-09 -1.23074074E-07*AMF 741
1423-*AMF 741  6.67588323E-04 -7.43115125E-10 -1.92596716E-09 -1.17849368E-07*AMF 742
1424-*AMF 742  3.86485364E-04 -4.56106264E-10 -1.05958264E-09 -5.60358124E-08*AMF 743
1425-*AMF 743  7.99566801E-05 -9.64771874E-11 -2.20782198E-10                *AMF 744
1426-DMI      *MFLC                103                85                2.78155632E-08 *AMF 745
1427-*AMF 745 -9.85099849E-12  1.04006085E-06  3.49567163E-12  1.14740146E-07*AMF 746
1428-*AMF 746 -1.27310315E-10 -8.86682665E-06 -1.88404570E-11  1.93875564E-07*AMF 747
1429-*AMF 747 -8.24899926E-10  8.26093747E-05  6.51151355E-11  2.74070487E-07*AMF 748
1430-*AMF 748 -7.02858571E-09  2.07493082E-04 -1.81881399E-09  2.42510225E-07*AMF 749
1431-*AMF 749 -2.03014068E-08  2.18821950E-02 -1.88825539E-08  1.44140870E-07*AMF 750
1432-*AMF 750 -7.02413416E-09  3.33130080E-03 -4.24890700E-09  1.81043731E-07*AMF 751
1433-*AMF 751 -4.67000660E-09  1.01476093E-03 -1.60883085E-09  1.32398782E-07*AMF 752
1434-*AMF 752 -1.51024149E-09  1.31828390E-04 -2.41355599E-10  8.03086095E-08*AMF 753
1435-*AMF 753 -7.72895969E-10  5.31498663E-05 -9.72441155E-11  7.68254722E-08*AMF 754
1436-*AMF 754 -4.64097205E-10  1.58224429E-05 -3.10038245E-11  3.64951518E-08*AMF 755
1437-*AMF 755 -9.82028209E-11  6.40203154E-07 -1.28082007E-12                *AMF 756
1438-DMI      *MFLC                104                85                -1.54645434E-08 *AMF 757
1439-*AMF 757 -2.43436660E-11  3.61412636E-12  3.43904594E-06 -6.38087272E-08*AMF 758
1440-*AMF 758 -2.55705457E-10 -1.90022442E-11 -2.25027034E-05 -1.07739027E-07*AMF 759
1441-*AMF 759 -2.00433470E-09  7.08124670E-11  1.41181008E-04 -1.52929715E-07*AMF 760
1442-*AMF 760 -1.57049556E-08 -1.85315185E-09 -8.76411097E-04 -1.31891625E-07*AMF 761
1443-*AMF 761 -5.55819814E-08 -1.98829539E-08  1.52279809E-02 -7.99408895E-08*AMF 762
1444-*AMF 762 -2.29062920E-08 -4.11298018E-09  1.50713162E-03 -1.00747400E-07*AMF 763
1445-*AMF 763 -1.22917321E-08 -1.55070512E-09  2.76346924E-04 -7.36433776E-08*AMF 764
1446-*AMF 764 -3.59236707E-09 -2.36816788E-10  1.52885768E-05 -4.46634729E-08*AMF 765
1447-*AMF 765 -1.80499349E-09 -9.81958681E-11  4.37548897E-06 -4.27215454E-08*AMF 766
1448-*AMF 766 -1.04421161E-09 -3.14634430E-11 -3.08531654E-08 -2.02924753E-08*AMF 767
1449-*AMF 767 -2.16129573E-10 -1.30566131E-12 -1.78231296E-08                *AMF 768
1450-DMI      *MFLC                105                85                4.90845889E-02 *AMF 769
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## S O R T E D B U L K D A T A E C H O

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1451-	*AMF 769	-2.41381066E-08	1.63609322E-08	-7.39594697E-09	2.02464402E-01	*AMF 770				
1452-	*AMF 770	-1.03132095E-07	6.39727205E-08	-3.54191485E-08	3.42133164E-01	*AMF 771				
1453-	*AMF 771	-1.72234309E-07	1.14160002E-07	-5.67048346E-08	4.82982993E-01	*AMF 772				
1454-	*AMF 772	-2.42937631E-07	1.56912961E-07	-8.36799359E-08	4.35583711E-01	*AMF 773				
1455-	*AMF 773	-2.20C73332E-07	1.44140870E-07	-7.99408895E-08	2.88298786E-01	*AMF 774				
1456-	*AMF 774	-1.420048E5E-07	8.05810600E-08	-5.06980662E-08	3.51194501E-01	*AMF 775				
1457-	*AMF 775	-1.7E746E59E-07	1.13814792E-07	-6.01436909E-08	2.55121648E-01	*AMF 776				
1458-	*AMF 776	-1.25808924E-07	7.05113052E-08	-4.15853982E-08	1.54633284E-01	*AMF 777				
1459-	*AMF 777	-6.91999844E-08	4.58765506E-08	-3.02708187E-08	1.47799194E-01	*AMF 778				
1460-	*AMF 778	-8.00321232E-08	3.76587650E-08	-2.58106745E-08	7.01823235E-02	*AMF 779				
1461-	*AMF 779	-3.418400E5E-08	2.03686774E-08	-1.46092702E-08		*AMF 780				
1462-	DMI *MFLC		106	85	-2.51060257E-08	*AMF 781				
1463-	*AMF 781	2.29725447E-06	-2.62765504E-12	-6.33936393E-12	-1.03551258E-07	*AMF 782				
1464-	*AMF 782	2.45672739E-05	-3.25240390E-11	-6.74713341E-11	-1.74926811E-07	*AMF 783				
1465-	*AMF 783	1.91509767E-04	-2.25392038E-10	-5.25425703E-10	-2.46425145E-07	*AMF 784				
1466-	*AMF 784	1.49113592E-03	-1.85932469E-09	-4.04091338E-09	-2.19340450E-07	*AMF 785				
1467-	*AMF 785	8.36516917E-03	-7.02413416E-09	-2.29062920E-08	-1.42004865E-07	*AMF 786				
1468-	*AMF 786	1.35429464E-02	-7.93786725E-09	-3.75308886E-08	-1.77079471E-07	*AMF 787				
1469-	*AMF 787	6.53826073E-03	-5.45248113E-09	-1.81182038E-08	-1.29740783E-07	*AMF 788				
1470-	*AMF 788	1.84668112E-03	-1.98033168E-09	-4.95467134E-09	-7.86260443E-08	*AMF 789				
1471-	*AMF 789	5.18425620E-04	-9.60265645E-10	-2.65111022E-09	-7.53358336E-08	*AMF 790				
1472-	*AMF 790	5.22835413E-04	-6.00280270E-10	-1.43341761E-09	-3.58516345E-08	*AMF 791				
1473-	*AMF 791	1.68399399E-04	-1.29972616E-10	-2.99171576E-10		*AMF 792				
1474-	DMI *MFLC		107	85	1.43328194E-08	*AMF 793				
1475-	*AMF 793	-2.72581437E-12	1.91470008E-07	1.04148840E-13	5.91210672E-08	*AMF 794				
1476-	*AMF 794	-3.33130745E-11	-1.66949030E-06	8.12483761E-14	9.98982728E-08	*AMF 795				
1477-	*AMF 795	-2.28147945E-10	1.43072175E-05	-7.30554679E-12	1.41031080E-07	*AMF 796				
1478-	*AMF 796	-1.88130644E-09	5.10600421E-06	-1.48068072E-10	1.25656811E-07	*AMF 797				
1479-	*AMF 797	-7.21446725E-09	3.33130080E-03	-4.11298018E-09	8.05810600E-08	*AMF 798				
1480-	*AMF 798	-7.93786725E-09	9.25385579E-03	-7.22551974E-09	1.01380010E-07	*AMF 799				
1481-	*AMF 799	-5.81165693E-09	2.67313677E-03	-3.35527872E-09	7.43399937E-08	*AMF 800				
1482-	*AMF 800	-1.99401340E-09	3.43549531E-04	-5.75136827E-10	4.51005064E-08	*AMF 801				
1483-	*AMF 801	-1.02774100E-09	1.36176779E-04	-2.33075781E-10	4.31385168E-08	*AMF 802				
1484-	*AMF 802	-6.28751939E-10	3.86034080E-05	-7.55178142E-11	2.04928448E-08	*AMF 803				
1485-	*AMF 803	-1.35505523E-10	1.63454570E-06	-3.27808961E-12		*AMF 804				
1486-	DMI *MFLD		108	85	-9.34655020E-09	*AMF 805				
1487-	*AMF 805	-6.17906854E-12	9.40841914E-14	2.91075708E-07	-3.85544006E-08	*AMF 806				
1489-	*AMF 806	-6.63812200E-11	2.02273799E-13	-1.92699463E-06	-6.51419896E-08	*AMF 807				
1489-	*AMF 807	-5.13075E04E-10	-7.79461305E-12	1.25719462E-05	-9.20170464E-08	*AMF 808				
1490-	*AMF 808	-3.56821420E-09	-1.47186638E-10	-8.32610240E-05	-8.20970172E-08	*AMF 809				
1491-	*AMF 809	-2.26056365E-08	-4.24890700E-09	1.50713162E-03	-5.06980662E-08	*AMF 810				
1492-	*AMF 810	-3.753088E6E-08	-7.22551974E-09	6.83079660E-03	-6.61344188E-08	*AMF 811				
1493-	*AMF 811	-1.76144397E-08	-3.27940763E-09	1.24011585E-03	-4.85459388E-08	*AMF 812				
1494-	*AMF 812	-4.54016561E-09	-5.73014303E-10	7.11917091E-05	-2.94365172E-08	*AMF 813				
1495-	*AMF 813	-2.45242537E-09	-2.38641995E-10	2.05770630E-05	-2.81440045E-08	*AMF 814				
1496-	*AMF 814	-1.39559453E-09	-7.74169340E-11	-1.22077779E-08	-1.33641933E-08	*AMF 815				
1497-	*AMF 815	-2.89337443E-10	-3.37588898E-12	-5.79634793E-08		*AMF 816				
1499-	DMI *MFLD		109	85	6.15712553E-02	*AMF 817				
1499-	*AMF 817	-3.02792778E-08	2.05230677E-08	-9.27759913E-09	2.53968835E-01	*AMF 818				
1500-	*AMF 818	-1.29374826E-07	8.02460249E-08	-4.44280879E-08	4.29155171E-01	*AMF 819				

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1501- *AMF	819	-2.16097476E-07	1.43201646E-07	-7.11359576E-08	6.05616570E-01	*AMF	820			
1502- *AMF	820	-3.05054073E-07	1.96758492E-07	-1.04872527E-07	5.43552399E-01	*AMF	821			
1503- *AMF	821	-2.77057950E-07	1.81043731E-07	-1.00747400E-07	3.51194501E-01	*AMF	822			
1504- *AMF	822	-1.77079471E-07	1.01380010E-07	-6.61344188E-08	4.89867210E-01	*AMF	823			
1505- *AMF	823	-2.44762532E-07	1.54168788E-07	-7.90562353E-08	3.48937690E-01	*AMF	824			
1506- *AMF	824	-1.70948397E-07	9.58605142E-08	-5.66085561E-08	2.11017132E-01	*AMF	825			
1507- *AMF	825	-9.38999276E-08	6.23824121E-08	-4.12336263E-08	2.01130867E-01	*AMF	826			
1508- *AMF	826	-1.02631127E-07	5.11912432E-08	-3.51265577E-08	9.54154730E-02	*AMF	827			
1509- *AMF	827	-4.64158951E-08	2.76893992E-08	-1.98622239E-08		*AMF	828			
1510- DMI	*MFLC		110	85				-3.17995301E-08	*AMF	829
1511- *AMF	829	1.28012016E-06	-1.51670863E-12	-3.50499082E-12	-1.31163063E-07	*AMF	830			
1512- *AMF	830	1.38998594E-05	-1.77303311E-11	-3.77154002E-11	-2.21606058E-07	*AMF	831			
1513- *AMF	831	1.06659805E-04	-1.29170397E-10	-2.91523250E-10	-3.12443035E-07	*AMF	832			
1514- *AMF	832	8.21882160E-04	-1.03070019E-09	-2.23438090E-09	-2.78854088E-07	*AMF	833			
1515- *AMF	833	4.53599170E-03	-4.67000660E-09	-1.22917321E-08	-1.78746859E-07	*AMF	834			
1516- *AMF	834	6.53826073E-03	-5.81165693E-09	-1.76144397E-08	-2.44762532E-07	*AMF	835			
1517- *AMF	835	2.10703909E-02	-1.34365798E-08	-5.88701248E-08	-1.77979075E-07	*AMF	836			
1518- *AMF	836	5.47801331E-03	-5.28334354E-09	-1.47268402E-08	-1.07629376E-07	*AMF	837			
1519- *AMF	837	2.65320111E-03	-2.54597032E-09	-7.66682007E-09	-1.03148238E-07	*AMF	838			
1520- *AMF	838	1.44244851E-03	-1.60795888E-09	-3.97059807E-09	-4.91494561E-08	*AMF	839			
1521- *AMF	839	3.01530352E-04	-3.59831631E-10	-8.32143243E-10		*AMF	840			
1522- DMI	*MFLC		111	85				2.01364259E-08	*AMF	841
1523- *AMF	841	-1.53419898E-12	6.46339231E-08	-2.96292735E-14	8.30589215E-08	*AMF	842			
1524- *AMF	842	-1.78592280E-11	-5.69178667E-07	4.45295439E-13	1.40350267E-07	*AMF	843			
1525- *AMF	843	-1.27656381E-10	4.69353836E-06	-5.04441194E-12	1.98063844E-07	*AMF	844			
1526- *AMF	844	-1.02271303E-09	-3.28295112E-06	-2.09658541E-11	1.77297352E-07	*AMF	845			
1527- *AMF	845	-4.59550655E-09	1.01476093E-03	-1.55070512E-09	1.13814792E-07	*AMF	846			
1528- *AMF	846	-5.45248113E-09	2.67313677E-03	-3.27940763E-09	1.54168788E-07	*AMF	847			
1529- *AMF	847	-1.34365798E-08	1.37952156E-02	-1.13523591E-08	1.13323665E-07	*AMF	848			
1530- *AMF	848	-5.05767517E-09	1.74277346E-03	-2.59220800E-09	6.87497277E-08	*AMF	849			
1531- *AMF	849	-2.62777244E-09	6.72633061E-04	-1.06101217E-09	6.56901875E-08	*AMF	850			
1532- *AMF	850	-1.64789427E-09	1.75264548E-04	-3.49497098E-10	3.12016937E-08	*AMF	851			
1533- *AMF	851	-3.66108921E-10	7.83665382E-06	-1.64543240E-11		*AMF	852			
1534- DMI	*MFLC		112	85				-1.06780078E-08	*AMF	853
1535- *AMF	853	-1.50364009E-12	-3.54167887E-14	5.98943757E-08	-4.40449561E-08	*AMF	854			
1536- *AMF	854	-3.79127146E-11	4.97855500E-13	-3.94021470E-07	-7.44251452E-08	*AMF	855			
1537- *AMF	855	-2.91820568E-10	-5.35232362E-12	2.50958055E-06	-1.05038737E-07	*AMF	856			
1538- *AMF	856	-2.24360375E-09	-2.02111661E-11	-1.63196382E-05	-9.41106464E-08	*AMF	857			
1539- *AMF	857	-1.24464776E-08	-1.60883085E-09	2.76346924E-04	-6.01436909E-08	*AMF	858			
1540- *AMF	858	-1.81182038E-08	-3.35527872E-09	1.24011585E-03	-7.90562353E-08	*AMF	859			
1541- *AMF	859	-5.88701248E-08	-1.13523591E-08	9.88370925E-03	-6.02479986E-08	*AMF	860			
1542- *AMF	860	-1.50539137E-08	-2.63219979E-09	5.51085453E-04	-3.65296060E-08	*AMF	861			
1543- *AMF	861	-7.25712823E-09	-1.10398024E-09	1.54295252E-04	-3.48835556E-08	*AMF	862			
1544- *AMF	862	-3.95763067E-09	-3.61206620E-10	-4.02364822E-06	-1.65478973E-08	*AMF	863			
1545- *AMF	863	-8.23909163E-10	-1.70582715E-11	-7.22626112E-07		*AMF	864			
1546- DMI	*MFLC		113	85				4.49862964E-02	*AMF	865
1547- *AMF	865	-2.21234016E-08	1.49949493E-08	-6.77859191E-09	1.85559154E-01	*AMF	866			
1548- *AMF	866	-9.45283887E-08	5.96306115E-08	-3.24606617E-08	3.13554883E-01	*AMF	867			
1549- *AMF	867	-1.57905561E-07	1.04629066E-07	-5.19753307E-08	4.42449629E-01	*AMF	868			
1550- *AMF	868	-2.23001507E-07	1.43746433E-07	-7.66106609E-08	3.96711290E-01	*AMF	869			

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1551-AMF	869	-2.02962497E-07	1.32398782E-07	-7.36433776E-08	2.55121648E-01	AMF	870			
1552-AMF	870	-1.29740783E-07	7.43399937E-08	-4.85459388E-08	3.48937690E-01	AMF	871			
1553-AMF	871	-1.77979075E-07	1.13323665E-07	-6.02479986E-08	2.92934000E-01	AMF	872			
1554-AMF	872	-1.39302927E-07	7.67540769E-08	-4.44921149E-08	1.74048185E-01	AMF	873			
1555-AMF	873	-7.56349436E-08	5.00478343E-08	-3.29961338E-08	1.62534773E-01	AMF	874			
1556-AMF	874	-8.65587957E-08	4.10267482E-08	-2.82661645E-08	7.67656585E-02	AMF	875			
1557-AMF	875	-3.71744697E-08	2.22519816E-08	-1.59814775E-08		AMF	876			
1559-DMI	*MFLC		114	85	-2.23153833E-08	AMF	877			
1559-AMF	877	3.77952176E-07	-4.61147071E-13	-1.03087591E-12	-9.20452976E-08	AMF	878			
1560-AMF	878	4.10285247E-06	-5.17096695E-12	-1.11362300E-11	-1.55527061E-07	AMF	879			
1561-AMF	879	3.14259208E-05	-3.88200583E-11	-8.59610161E-11	-2.19377000E-07	AMF	880			
1562-AMF	880	2.41915026E-04	-3.03079117E-10	-6.58181953E-10	-1.96239455E-07	AMF	881			
1563-AMF	881	1.32873119E-03	-1.51024149E-09	-3.59236707E-09	-1.25808924E-07	AMF	882			
1564-AMF	882	1.84668112E-03	-1.99401340E-09	-4.94016561E-09	-1.70948397E-07	AMF	883			
1565-AMF	883	5.47801331E-03	-5.05767517E-09	-1.50539137E-08	-1.39302927E-07	AMF	884			
1566-AMF	884	1.47013366E-02	-8.94598529E-09	-4.03680360E-08	-8.29979854E-08	AMF	885			
1567-AMF	885	6.53460622E-03	-4.19051815E-09	-1.91753458E-08	-7.90892045E-08	AMF	886			
1568-AMF	886	3.04521178E-03	-2.83811241E-09	-8.38589997E-09	-3.78007279E-08	AMF	887			
1569-AMF	887	6.45792810E-04	-7.22665039E-10	-1.78184800E-09		AMF	888			
1570-DMI	*MFLC		115	85	1.24570327E-08	AMF	889			
1571-AMF	889	-4.72911424E-13	8.55937188E-09	-1.52655768E-14	5.13827345E-08	AMF	890			
1572-AMF	890	-5.26108324E-12	-7.55055112E-08	1.16619388E-13	8.68253665E-08	AMF	891			
1573-AMF	891	-3.90153049E-11	6.18402964E-07	-1.06984040E-12	1.22517747E-07	AMF	892			
1574-AMF	892	-3.04758885E-10	-5.51770597E-07	2.98864767E-14	1.09791529E-07	AMF	893			
1575-AMF	893	-1.53725987E-09	1.31828390E-04	-2.36816788E-10	7.05113052E-08	AMF	894			
1576-AMF	894	-1.98033168E-09	3.43549531E-04	-5.73014303E-10	9.58605142E-08	AMF	895			
1577-AMF	895	-5.28334354E-09	1.74277346E-03	-2.63219979E-09	7.67540769E-08	AMF	896			
1578-AMF	896	-8.94598529E-09	9.57347453E-03	-8.20900325E-09	4.67863188E-08	AMF	897			
1579-AMF	897	-4.65056615E-09	3.61828483E-03	-3.43984907E-09	4.45615740E-08	AMF	898			
1580-AMF	898	-3.07887271E-09	8.84891022E-04	-1.33470368E-09	2.12311768E-08	AMF	899			
1581-AMF	899	-7.50234541E-10	6.15121680E-05	-1.25841212E-10		AMF	900			
1582-DMI	*MFLC		116	85	-7.34058148E-09	AMF	901			
1583-AMF	901	-1.00787434E-12	-1.62246044E-14	2.11243267E-09	-3.02783967E-08	AMF	902			
1584-AMF	902	-1.09588640E-11	1.19739396E-13	-1.41816656E-08	-5.11638767E-08	AMF	903			
1585-AMF	903	-8.42214631E-11	-1.10045046E-12	9.87653266E-08	-7.21964852E-08	AMF	904			
1586-AMF	904	-6.47051079E-10	4.96567644E-14	-6.33008995E-07	-6.47242473E-08	AMF	905			
1587-AMF	905	-3.55743768E-09	-2.41359599E-10	1.52885768E-05	-4.15853982E-08	AMF	906			
1588-AMF	906	-4.95467134E-09	-5.75136827E-10	7.11917091E-05	-5.66085561E-08	AMF	907			
1589-AMF	907	-1.47268402E-08	-2.59220800E-09	5.51085453E-04	-4.44921149E-08	AMF	908			
1590-AMF	908	-4.03680360E-08	-8.20900325E-09	6.83207810E-03	-2.74341581E-08	AMF	909			
1591-AMF	909	-1.75770865E-08	-3.54071905E-09	2.25096173E-03	-2.63837840E-08	AMF	910			
1592-AMF	910	-8.18480572E-09	-1.39879641E-09	2.43433271E-04	-1.25282007E-08	AMF	911			
1593-AMF	911	-1.72712467E-09	-1.30432595E-10	-3.83782117E-06		AMF	912			
1594-DMI	*MFLC		117	85	2.72853412E-02	AMF	913			
1595-AMF	913	-1.34184042E-08	9.39481912E-09	-4.11138856E-09	1.12546384E-01	AMF	914			
1596-AMF	914	-5.73338568E-08	3.55609551E-08	-1.96882191E-08	1.90178871E-01	AMF	915			
1597-AMF	915	-5.57733732E-08	6.34602202E-08	-3.15243582E-08	2.68354297E-01	AMF	916			
1598-AMF	916	-1.35252492E-07	8.71849579E-08	-4.64657646E-08	2.40584612E-01	AMF	917			
1599-AMF	917	-1.23074074E-07	8.03086095E-08	-4.46634729E-08	1.54633284E-01	AMF	918			
1600-AMF	918	-7.86260443E-08	4.51005064E-08	-2.94365172E-08	2.11017132E-01	AMF	919			

## S O R T E D B U L K D A T A E C H O

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1501-AMF	919	-1.07629376E-07	6.47497277E-08	-3.65296060E-08	1.74048185E-01	*AMF	920			
1502-AMF	920	-8.25579854E-08	4.57863188E-08	-2.74341581E-08	1.10184968E-01	*AMF	921			
1503-AMF	921	-4.66062566E-08	3.12040953E-09	-2.03205559E-08	1.00688994E-01	*AMF	922			
1504-AMF	922	-5.34797238E-08	2.33462993E-08	-1.74590156E-08	4.73876670E-02	*AMF	923			
1505-AMF	923	-2.28681110E-08	1.37325564E-08	-9.86642590E-09		*AMF	924			
1506-DMI	*MFLC	118	85		-1.22757484E-08	*AMF	925			
1507-AMF	925	1.90437561E-07	-2.33496707E-13	-5.19127005E-13	-5.06344087E-08	*AMF	926			
1508-AMF	926	2.06714139E-06	-2.59969477E-12	-5.61097349E-12	-8.55562803E-08	*AMF	927			
1509-AMF	927	1.56639741E-05	-1.96210409E-11	-4.33031527E-11	-1.20683239E-07	*AMF	928			
1510-AMF	928	1.21786055E-04	-1.52600252E-10	-3.31384475E-10	-1.07963842E-07	*AMF	929			
1511-AMF	929	6.67588323E-04	-7.72895969E-10	-1.80499349E-09	-6.91999844E-08	*AMF	930			
1512-AMF	930	9.18425620E-04	-1.02774100E-09	-2.45242537E-09	-9.38999278E-08	*AMF	931			
1513-AMF	931	2.65320111E-03	-2.62777244E-09	-7.25712823E-09	-7.56349436E-08	*AMF	932			
1514-AMF	932	6.53460622E-03	-4.65056615E-09	-1.75770865E-08	-4.66062566E-08	*AMF	933			
1515-AMF	933	5.80589473E-03	-3.07129899E-09	-1.68573635E-08	-4.41291661E-08	*AMF	934			
1516-AMF	934	2.32159719E-03	-2.02814321E-09	-6.37732711E-09	-2.11147508E-08	*AMF	935			
1517-AMF	935	4.74988716E-04	-5.23577626E-10	-1.31078814E-09		*AMF	936			
1518-DMI	*MFLC	119	85		8.10435807E-09	*AMF	937			
1519-AMF	937	-2.27673132E-13	3.55264884E-09	-7.41677295E-15	3.34288295E-08	*AMF	938			
1520-AMF	938	-2.51478526E-12	-3.14192015E-08	5.05918481E-14	5.64873233E-08	*AMF	939			
1521-AMF	939	-1.86955280E-11	2.34736449E-07	-4.69361312E-13	7.97073767E-08	*AMF	940			
1522-AMF	940	-1.45618656E-10	-3.00384897E-07	2.86437974E-13	7.14345560E-08	*AMF	941			
1523-AMF	941	-7.43115125E-10	5.31498663E-05	-9.81958681E-11	4.58765506E-08	*AMF	942			
1524-AMF	942	-9.60265645E-10	1.36176779E-04	-2.38641995E-10	6.23824121E-08	*AMF	943			
1525-AMF	943	-2.54597032E-09	6.72633061E-04	-1.10398024E-09	5.00478343E-08	*AMF	944			
1526-AMF	944	-4.19051815E-09	3.61828483E-03	-3.54071905E-09	3.12040953E-08	*AMF	945			
1527-AMF	945	-3.07129899E-09	3.91214341E-03	-2.77876655E-09	2.94942168E-08	*AMF	946			
1528-AMF	946	-2.07496287E-09	6.19702400E-04	-1.11781762E-09	1.40526346E-08	*AMF	947			
1529-AMF	947	-5.12648146E-10	5.38137829E-05	-1.13045934E-10		*AMF	948			
1530-DMI	*MFLC	120	85		-5.34357270E-09	*AMF	949			
1531-AMF	949	-5.46309905E-13	-7.37258242E-15	4.71042316E-10	-2.20411458E-08	*AMF	950			
1532-AMF	950	-5.94600497E-12	4.94124361E-14	-3.24659521E-09	-3.72447282E-08	*AMF	951			
1533-AMF	951	-4.57060362E-11	-4.71456207E-13	2.44886884E-08	-5.25547605E-08	*AMF	952			
1534-AMF	952	-3.50944385E-10	2.89412483E-13	-1.72288082E-07	-4.71137653E-08	*AMF	953			
1535-AMF	953	-1.92596716E-09	-9.72441155E-11	4.37548897E-06	-3.02708187E-08	*AMF	954			
1536-AMF	954	-2.65111022E-09	-2.33075781E-10	2.05770630E-05	-4.12336263E-08	*AMF	955			
1537-AMF	955	-7.66682007E-09	-1.06101217E-09	1.54295252E-04	-3.29961338E-08	*AMF	956			
1538-AMF	956	-1.91753458E-08	-3.43984907E-09	2.25096173E-03	-2.03205559E-08	*AMF	957			
1539-AMF	957	-1.68573635E-08	-2.77876655E-09	2.93185282E-03	-1.95547685E-08	*AMF	958			
1540-AMF	958	-6.73653489E-09	-1.14698739E-09	2.90461583E-04	-9.28312716E-09	*AMF	959			
1541-AMF	959	-1.36826839E-09	-1.13880308E-10	-5.03673800E-06		*AMF	960			
1542-DMI	*MFLC	121	85		2.61024237E-02	*AMF	961			
1543-AMF	961	-1.28367077E-08	8.70052830E-09	-3.93314536E-09	1.07667089E-01	*AMF	962			
1544-AMF	962	-5.48486341E-08	3.40192550E-08	-1.88346618E-08	1.81933761E-01	*AMF	963			
1545-AMF	963	-9.16242584E-08	6.07089419E-08	-3.01576435E-08	2.56716669E-01	*AMF	964			
1546-AMF	964	-1.25410921E-07	8.34040179E-08	-4.44506227E-08	2.30114400E-01	*AMF	965			
1547-AMF	965	-1.17849368E-07	7.68254722E-08	-4.27215454E-08	1.47799194E-01	*AMF	966			
1548-AMF	966	-7.53358336E-08	4.31385168E-08	-2.81440045E-08	2.01130867E-01	*AMF	967			
1549-AMF	967	-1.03148238E-07	6.56901875E-08	-3.48835556E-08	1.62534773E-01	*AMF	968			
1550-AMF	968	-7.90692045E-08	4.45615740E-08	-2.63837840E-08	1.00688994E-01	*AMF	969			



## SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
1651-AMF 969	-4.41291661E-08	2.94942168E-08	-1.95547685E-08	1.07748151E-01	AMF 970					
1652-AMF 970	-5.52647812E-08	2.53169894E-08	-1.70803105E-08	4.83655632E-02	AMF 971					
1653-AMF 971	-2.3C856081E-08	1.39153329E-08	-1.00615978E-08		AMF 972					
1654-DMI	*MFLC	122	85	-1.41714551E-08	AMF 973					
1655-AMF 973	1.10556357E-07	-1.38966583E-13	-3.00284754E-13	-5.84540203E-08	AMF 974					
1656-AMF 974	1.15992819E-06	-1.50888850E-12	-3.25213207E-12	-9.87716362E-08	AMF 975					
1657-AMF 975	9.2C858765E-06	-1.14839813E-11	-2.51281634E-11	-1.39346866E-07	AMF 976					
1658-AMF 976	7.06102583E-05	-8.94574775E-11	-1.92126287E-10	-1.24773464E-07	AMF 977					
1659-AMF 977	3.8C485364E-04	-4.64097205E-10	-1.04421161E-09	-8.00321232E-08	AMF 978					
1660-AMF 978	5.22835413E-04	-6.28751939E-10	-1.39559453E-09	-1.08631127E-07	AMF 979					
1661-AMF 979	1.44844851E-03	-1.64789427E-09	-3.95763067E-09	-8.69987957E-08	AMF 980					
1662-AMF 980	3.04521178E-03	-3.07887271E-09	-8.18480572E-09	-5.34797238E-08	AMF 981					
1663-AMF 981	2.32159719E-03	-2.07496287E-09	-6.73653489E-09	-5.52647812E-08	AMF 982					
1664-AMF 982	6.4C913472E-03	-4.21446700E-09	-1.80530435E-08	-2.58286157E-08	AMF 983					
1665-AMF 983	9.55177310E-04	-1.00278230E-09	-2.74848988E-09		AMF 984					
1666-DMI	*MFLC	123	85	6.65346889E-09	AMF 985					
1667-AMF 985	-1.37193479E-13	1.14201804E-09	-3.40285386E-15	2.74441874E-08	AMF 986					
1668-AMF 986	-1.48997134E-12	-1.01642605E-08	1.61593727E-14	4.63746197E-08	AMF 987					
1669-AMF 987	-1.11921080E-11	8.03248668E-08	-1.70017212E-13	6.54367227E-08	AMF 988					
1670-AMF 988	-8.64363719E-11	-1.54075906E-07	2.97913007E-13	5.86485385E-08	AMF 989					
1671-AMF 989	-4.56106264E-10	1.58224429E-05	-3.14634430E-11	3.76587650E-08	AMF 990					
1672-AMF 990	-6.00280270E-10	3.86034080E-05	-7.74169340E-11	5.11912432E-08	AMF 991					
1673-AMF 991	-1.6C795888E-09	1.75264548E-04	-3.61206620E-10	4.10267482E-08	AMF 992					
1674-AMF 992	-2.83811241E-09	8.84891022E-04	-1.39879641E-09	2.53462993E-08	AMF 993					
1675-AMF 993	-2.02814321E-09	8.19702400E-04	-1.14698739E-09	2.53169894E-08	AMF 994					
1676-AMF 994	-4.21446700E-09	4.26616147E-03	-3.46573725E-09	1.22266783E-08	AMF 995					
1677-AMF 995	-9.72619540E-10	2.42316310E-04	-4.53645121E-10		AMF 996					
1678-DMI	*MFLC	124	85	-4.55835192E-09	AMF 997					
1679-AMF 997	-3.0C847997E-13	-3.91459326E-15	-9.81833087E-11	-1.88022611E-08	AMF 998					
1680-AMF 998	-3.28028403E-12	1.49080272E-14	5.95379968E-10	-3.17717017E-08	AMF 999					
1681-AMF 999	-2.52314142E-11	-1.72256198E-13	-2.76859491E-09	-4.48312889E-08	AMF1000					
1682-AMF1000	-1.93566871E-10	2.94853063E-13	4.78508966E-09	-4.01856681E-08	AMF1001					
1683-AMF1001	-1.05958264E-09	-3.10038245E-11	-3.08531654E-08	-2.58106745E-08	AMF1002					
1684-AMF1002	-1.43341761E-09	-7.55178142E-11	-1.22077779E-08	-3.51265577E-08	AMF1003					
1685-AMF1003	-3.97059807E-09	-3.49497098E-10	-4.02364822E-06	-2.82661645E-08	AMF1004					
1686-AMF1004	-8.3E589997E-09	-1.33470368E-09	2.43433271E-04	-1.74590156E-08	AMF1005					
1687-AMF1005	-6.37732711E-09	-1.11781762E-09	2.90461583E-04	-1.70803105E-08	AMF1006					
1688-AMF1006	-1.8C530435E-08	-3.46573725E-09	3.07063758E-03	-8.44032755E-09	AMF1007					
1689-AMF1007	-2.72990897E-09	-4.55731675E-10	1.10154933E-05		AMF1008					
1690-DMI	*MFLC	125	85	1.23995692E-02	AMF1009					
1691-AMF1009	-6.0C9790263E-09	4.13305656E-09	-1.86838300E-09	5.11456542E-02	AMF1010					
1692-AMF1010	-2.60552078E-08	1.61603353E-08	-8.94712571E-09	8.64248276E-02	AMF1011					
1693-AMF1011	-4.35261036E-08	2.98389046E-08	-1.43259307E-08	1.21948540E-01	AMF1012					
1694-AMF1012	-6.14849114E-08	3.96195219E-08	-2.11154507E-08	1.09302938E-01	AMF1013					
1695-AMF1013	-5.60358124E-08	3.64951518E-08	-2.02924753E-08	7.01823235E-02	AMF1014					
1696-AMF1014	-3.5E516345E-08	2.04928448E-08	-1.33641933E-08	9.54154730E-02	AMF1015					
1697-AMF1015	-4.91494561E-08	3.12016937E-08	-1.65478973E-08	7.67656565E-02	AMF1016					
1698-AMF1016	-3.78007279E-08	2.12311768E-08	-1.25282007E-08	4.73876670E-02	AMF1017					
1699-AMF1017	-2.111475C8E-08	1.40526346E-08	-9.28312716E-09	4.83655632E-02	AMF1018					
1700-AMF1018	-2.58286157E-08	1.22266783E-08	-8.44032755E-09	2.74055675E-02	AMF1019					

## S O R T E D B U L K D A T A E C H O

CARD  
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 ..  
1701-AMF1019 -1.24184325E-08 7.30652161E-09 -5.08361353E-09 \*AMF1020  
1702-DMI \*MFLD 126 85 -6.04721961E-09 \*AMF1021  
1703-AMF1021 2.2E784103E-08 -2.99527316E-14 -6.16723469E-14 -2.49434677E-08\*AMF1022  
1704-AMF1022 2.4E316496E-07 -3.14913297E-13 -6.70751540E-13 -4.21483826E-08\*AMF1023  
1705-AMF1023 1.90567971E-06 -2.39469122E-12 -5.19636764E-12 -5.94678156E-08\*AMF1024  
1706-AMF1024 1.46143775E-05 -1.82950460E-11 -3.97597788E-11 -5.32735953E-08\*AMF1025  
1707-AMF1025 7.99566801E-05 -9.82028209E-11 -2.16129573E-10 -3.41840085E-08\*AMF1026  
1708-AMF1026 1.08399399E-04 -1.35505523E-10 -2.89337443E-10 -4.64158951E-08\*AMF1027  
1709-AMF1027 3.01530352E-04 -3.66108921E-10 -8.23909163E-10 -3.71744697E-08\*AMF1028  
1710-AMF1028 6.45792810E-04 -7.50234541E-10 -1.72712467E-09 -2.28681110E-08\*AMF1029  
1711-AMF1029 4.74588716E-04 -5.12648146E-10 -1.36826839E-09 -2.30856081E-08\*AMF1030  
1712-AMF1030 5.55177310E-04 -9.72619540E-10 -2.72990897E-09 -1.24184325E-08\*AMF1031  
1713-AMF1031 5.19233125E-03 -1.11338094E-09 -6.20675777E-09 \*AMF1032  
1714-DMI \*MFLD 127 85 3.59877705E-09 \*AMF1033  
1715-AMF1033 -2.94997825E-14 4.31160802E-11 -6.52249251E-16 1.48442076E-08\*AMF1034  
1716-AMF1034 -3.09382186E-13 -3.81521925E-10 -1.68464583E-15 2.50834411E-08\*AMF1035  
1717-AMF1035 -2.32288494E-12 -3.08606873E-09 -1.10831110E-14 3.53936223E-08\*AMF1036  
1718-AMF1036 -1.77621806E-11 -3.84627086E-09 6.30871494E-15 3.17231468E-08\*AMF1037  
1719-AMF1037 -9.64771874E-11 6.40203154E-07 -1.30566131E-12 2.03686774E-08\*AMF1038  
1720-AMF1038 -1.29972616E-10 1.63454570E-06 -3.37588898E-12 2.76893992E-08\*AMF1039  
1721-AMF1039 -3.58831631E-10 7.83665382E-06 -1.70582715E-11 2.22519816E-08\*AMF1040  
1722-AMF1040 -7.22665039E-10 6.15121680E-05 -1.30432595E-10 1.37325564E-08\*AMF1041  
1723-AMF1041 -5.23577626E-10 5.38137829E-05 -1.13880308E-10 1.39153329E-08\*AMF1042  
1724-AMF1042 -1.00278230E-09 2.42316310E-04 -4.55731675E-10 7.30652161E-09\*AMF1043  
1725-AMF1043 -1.11338094E-09 1.54386647E-03 -1.09600862E-09 \*AMF1044  
1726-DMI \*MFLD 128 85 -2.58110711E-09 \*AMF1045  
1727-AMF1045 -6.1E741169E-14 -9.69502688E-16 -1.53741048E-11 -1.06465308E-08\*AMF1046  
1728-AMF1046 -6.79561729E-13 -2.46313136E-15 9.72937564E-11 -1.79902919E-08\*AMF1047  
1729-AMF1047 -5.25068617E-12 -1.28683515E-14 -5.23982413E-10 -2.53849350E-08\*AMF1048  
1730-AMF1048 -4.03244521E-11 4.14099500E-15 2.95487701E-09 -2.27526264E-08\*AMF1049  
1731-AMF1049 -2.20782198E-10 -1.28082007E-12 -1.78231296E-08 -1.46092702E-08\*AMF1050  
1732-AMF1050 -2.99171576E-10 -3.27808961E-12 -5.79634793E-08 -1.98622239E-08\*AMF1051  
1733-AMF1051 -8.32143243E-10 -1.64543240E-11 -7.22626112E-07 -1.59814775E-08\*AMF1052  
1734-AMF1052 -1.7E184800E-09 -1.25841212E-10 -3.83782117E-06 -9.86642590E-09\*AMF1053  
1735-AMF1053 -1.31078814E-09 -1.13045934E-10 -5.03673800E-06 -1.00615978E-08\*AMF1054  
1736-AMF1054 -2.74E4898E-09 -4.53645121E-10 1.10154933E-05 -5.08361353E-09\*AMF1055  
1737-AMF1055 -6.20675777E-09 -1.09600862E-09 1.15759957E-03 \*AMF1056  
1738-DMI PDU2 0 2 1 2 88 128 6APD 0  
1739-DMI \*PDU2 17 1 -1.10994093E-03 \*APD 1  
1740-APD 1 -3.46021212E-10 2.64811284E-10 -2.26692456E-10 -8.01921124E-04\*APD 2  
1741-APD 2 -1.12125067E-10 5.08164483E-11 -2.50242049E-11 -7.61846313E-04\*APD 3  
1742-APD 3 -6.06729111E-11 1.85693821E-11 -6.25622210E-12 -7.50610139E-04\*APD 4  
1743-APD 4 -3.66992964E-11 7.71644467E-12 -1.80319648E-12 -7.46702543E-04\*APD 5  
1744-APD 5 -2.26768326E-11 3.15467791E-12 -4.89373082E-13 -7.45557481E-04\*APD 6  
1745-APD 6 -1.74637110E-11 1.87853118E-12 -2.21055541E-13 -7.44902529E-04\*APD 7  
1746-APD 7 -1.3E300595E-11 1.18429398E-12 -1.08957602E-13 -7.44292280E-04\*APD 8  
1747-APD 8 -5.5E077801E-12 5.57776102E-13 -3.20770835E-14 -7.43997283E-04\*APD 9  
1748-APD 9 -6.97346781E-12 2.83747960E-13 -1.00520720E-14 -7.43735814E-04\*APD 10  
1749-APD 10 -1.13169630E-12 5.22857853E-15 -9.53694330E-18 -7.43745361E-04\*APD 11  
1750-APD 11 -3.70424438E-12 7.12387506E-14 -7.43138427E-16 \*APD 12

## SORTED BULK DATA ECHO

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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
1751-DMI *PDU2 18 1 5.42383471E-10 *APD 13
1752-APD 13 -7.56498659E-04 -5.49899015E-10 9.50171053E-11 3.91866539E-10*APD 14
1753-APD 14 -2.45267525E-04 -1.05523854E-10 1.04887835E-11 3.72283537E-10*APD 15
1754-APC 15 -1.32647823E-04 -3.85606130E-11 2.62226699E-12 3.66792818E-10*APD 16
1755-APD 16 -8.02348659E-05 -1.60237240E-11 7.55801725E-13 3.64883457E-10*APD 17
1755-APD 17 -4.95778659E-05 -6.55090565E-12 2.05118474E-13 3.64323904E-10*APD 18
1757-APD 18 -3.81805294E-05 -3.90089957E-12 9.26543998E-14 3.64003938E-10*APD 19
1758-APD 19 -3.02363333E-05 -2.45926803E-12 4.56690959E-14 3.63705732E-10*APD 20
1759-APD 20 -2.09462305E-05 -1.15826012E-12 1.34449641E-14 3.63561403E-10*APD 21
1761-APD 21 -1.52459361E-05 -5.89222139E-13 4.21328079E-15 3.63433728E-10*APD 22
1761-APC 22 -2.47420212E-06 -1.08575055E-14 3.99736603E-18 3.63438390E-10*APD 23
1762-APD 23 -8.65850553E-06 -1.47932176E-13 3.11483026E-16 *APD 24
1763-DMI *PDU2 19 1 -3.09632986E-10 *APD 25
1764-APC 25 9.25906907E-10 -5.91966789E-04 -7.52114593E-10 -2.23706775E-10*APD 26
1765-APD 26 3.00192093E-10 -1.13596543E-04 -8.30247121E-11 -2.12527371E-10*APD 27
1766-APC 27 1.62352617E-10 -4.15105314E-05 -2.07567297E-11 -2.09392920E-10*APD 28
1767-APC 28 5.82024323E-11 -1.72495493E-05 -5.98260243E-12 -2.08302819E-10*APD 29
1769-APC 29 6.06801970E-11 -7.05205730E-06 -1.62363005E-12 -2.07983436E-10*APD 30
1769-APC 30 4.67305777E-11 -4.19932258E-06 -7.33412788E-13 -2.07800721E-10*APD 31
1770-APC 31 3.70073833E-11 -2.64740538E-06 -3.61496965E-13 -2.07630482E-10*APD 32
1771-APD 32 2.56368815E-11 -1.24686812E-06 -1.06424526E-13 -2.07548131E-10*APD 33
1772-APC 33 1.86600596E-11 -6.34298260E-07 -3.33505264E-14 -2.07475204E-10*APD 34
1773-APC 34 3.02826861E-12 -1.16881154E-08 -3.16414319E-17 -2.07477882E-10*APD 35
1774-APC 35 5.91206249E-12 -1.59249169E-07 -2.46556701E-15 *APD 36
1775-DMI *PDU2 20 1 2.01916761E-10 *APD 37
1776-APC 37 2.07041628E-09 1.16655707E-09 -4.67414735E-04 1.45882792E-10*APD 38
1777-APC 38 6.71258382E-10 2.23858571E-10 -5.15971624E-05 1.38592526E-10*APD 39
1773-APC 39 3.63035824E-10 8.18025647E-11 -1.28996426E-05 1.36548495E-10*APD 40
1779-APC 40 2.19590041E-10 3.39927669E-11 -3.71799342E-06 1.35837633E-10*APD 41
1781-APC 41 1.35686726E-10 1.38971083E-11 -1.00903344E-06 1.35629355E-10*APD 42
1781-APD 42 1.04494038E-10 8.27537951E-12 -4.55792303E-07 1.35510200E-10*APD 43
1782-APC 43 8.27520552E-11 5.21709845E-12 -2.24658663E-07 1.35399192E-10*APD 44
1783-APC 44 5.73265047E-11 2.45713606E-12 -6.61394211E-08 1.35345485E-10*APD 45
1784-APC 45 4.17256923E-11 1.24997668E-12 -2.07262723E-08 1.35297926E-10*APD 46
1785-APD 46 6.77149743E-12 2.30331399E-14 -1.96641176E-11 1.35299674E-10*APD 47
1786-APC 47 2.21643121E-11 3.13823728E-13 -1.53227009E-09 *APD 48
1787-DMI *PDU2 21 1 -7.18155876E-04 *APD 49
1788-APC 49 -7.54960400E-11 3.30288852E-11 -2.39765569E-11 -1.64854247E-03*APD 50
1789-APC 50 -2.55028443E-10 1.74138967E-10 -2.15776494E-10 -1.41854514E-03*APD 51
1790-APC 51 -1.20745108E-10 5.78695841E-11 -5.24183752E-11 -1.36284344E-03*APD 52
1791-APD 52 -6.95118824E-11 2.30115926E-11 -1.48627638E-11 -1.34536158E-03*APD 53
1792-APC 53 -4.21845059E-11 9.23572937E-12 -4.00162022E-12 -1.34046632E-03*APD 54
1793-APD 54 -3.22766674E-11 5.44914894E-12 -1.79609452E-12 -1.33777061E-03*APD 55
1794-APC 55 -2.54732485E-11 3.41759520E-12 -8.81717713E-13 -1.33532425E-03*APD 56
1795-APD 56 -1.75918169E-11 1.60161814E-12 -2.58573328E-13 -1.33416559E-03*APD 57
1796-APC 57 -1.27862625E-11 8.13115742E-13 -8.11385464E-14 -1.33315497E-03*APD 58
1797-APC 58 -2.07342216E-12 1.49819630E-14 -7.68632636E-17 -1.33319222E-03*APD 59
1798-APD 59 -6.76701019E-12 2.04129248E-13 -5.99174844E-15 *APD 60
1799-DMI *PDU2 22 1 3.48299389E-10 *APD 61
1800-APD 61 -2.19648122E-04 -1.00766867E-10 7.75667985E-12 7.99528888E-10*APD 62
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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
1801- *APD	62	-7.41979573E-04	-5.31275468E-10	6.98060360E-11	6.87982116E-10	*APD	63				
1802- *APD	63	-3.51295574E-04	-1.76552620E-10	1.69579073E-11	6.60967281E-10	*APD	64				
1803- *APD	64	-2.02237818E-04	-7.02054109E-11	4.80826750E-12	6.52488730E-10	*APD	65				
1804- *APC	65	-1.22731566E-04	-2.81770163E-11	1.29456688E-12	6.50114407E-10	*APD	66				
1805- *APD	66	-5.39057209E-05	-1.66246461E-11	5.81056199E-13	6.48807008E-10	*APD	67				
1806- *APD	67	-7.41118711E-05	-1.04266422E-11	2.85245243E-13	6.47620624E-10	*APD	68				
1807- *APD	68	-5.11816324E-05	-4.88633092E-12	8.36512934E-14	6.47058851E-10	*APD	69				
1808- *APD	69	-3.72003415E-05	-2.48071095E-12	2.62492088E-14	6.46568576E-10	*APD	70				
1809- *APC	70	-6.03241369E-06	-4.57080357E-14	2.48660948E-17	6.46586562E-10	*APD	71				
1810- *APC	71	-1.97461195E-05	-6.22771962E-13	1.93839615E-15		*APD	72				
1811- DMI	*PDU2	23	1		-2.39719578E-10	*APD	73				
1812- *APC	73	2.81528134E-10	-1.01730766E-04	-7.75180753E-11	-5.50281376E-10	*APD	74				
1813- *APD	74	9.51012824E-10	-5.36357285E-04	-6.97621960E-10	-4.73508566E-10	*APD	75				
1814- *APD	75	4.50264048E-10	-1.78241462E-04	-1.69472658E-10	-4.54915439E-10	*APD	76				
1815- *APC	76	2.59212873E-10	-7.08769658E-05	-4.80524787E-11	-4.49079884E-10	*APD	77				
1816- *APC	77	1.57307958E-10	-2.84465495E-05	-1.29375460E-11	-4.47445858E-10	*APD	78				
1817- *APD	78	1.20361193E-10	-1.67836697E-05	-5.80691224E-12	-4.46546133E-10	*APD	79				
1818- *APD	79	5.49909318E-11	-1.05263798E-05	-2.85066068E-12	-4.45729453E-10	*APD	80				
1819- *APC	80	6.56007054E-11	-4.93307198E-06	-8.35987583E-13	-4.45342874E-10	*APD	81				
1820- *APD	81	4.76805539E-11	-2.50444009E-06	-2.62327215E-13	-4.45005366E-10	*APD	82				
1821- *APD	82	7.73188805E-12	-4.61452636E-08	-2.48504855E-16	-4.45017800E-10	*APD	83				
1822- *APD	83	2.53090604E-11	-6.28729197E-07	-1.93717858E-14		*APD	84				
1823- DMI	*PDU2	24	1		1.14571408E-10	*APD	85				
1824- *APD	85	6.00829608E-10	2.02371328E-10	-4.62075695E-05	2.63000954E-10	*APD	86				
1825- *APD	86	2.02962580E-09	1.06696696E-09	-4.15843679E-04	2.26308375E-10	*APD	87				
1826- *APC	87	9.60941327E-10	3.54572594E-10	-1.01020560E-04	2.17421983E-10	*APD	88				
1827- *APD	88	5.53205259E-10	1.40994383E-10	-2.86434806E-05	2.14633006E-10	*APD	89				
1828- *APD	89	3.35722339E-10	5.65882480E-11	-7.71191117E-06	2.13852006E-10	*APD	90				
1829- *APC	90	2.56871413E-10	3.33874872E-11	-3.46142861E-06	2.13421947E-10	*APD	91				
1830- *APC	91	2.02727057E-10	2.09399442E-11	-1.69924351E-06	2.13031676E-10	*APD	92				
1831- *APD	92	1.40003231E-10	9.81327953E-12	-4.98321867E-07	2.12846851E-10	*APD	93				
1832- *APD	93	1.01758546E-10	4.98204169E-12	-1.56369993E-07	2.12685605E-10	*APD	94				
1833- *APC	94	1.65011754E-11	9.17959827E-14	-1.4813674E-10	2.12691531E-10	*APD	95				
1834- *APD	95	5.40139322E-11	1.25072001E-12	-1.15472822E-08		*APD	96				
1835- DMI	*PDU2	25	1		-5.06198034E-04	*APD	97				
1836- *APD	97	-3.78335696E-11	8.33389954E-12	-4.97065670E-12	-1.05246878E-03	*APD	98				
1837- *APC	98	-1.11882698E-10	3.99587030E-11	-4.34668967E-11	-1.57433492E-03	*APD	99				
1838- *APC	99	-2.55165888E-10	1.30164934E-10	-1.97454858E-10	-1.38667435E-03	*APD	100				
1839- *APC	100	-1.26765792E-10	4.59342980E-11	-5.20322674E-11	-1.33645046E-03	*APD	101				
1840- *APC	101	-7.26328303E-11	1.74379122E-11	-1.34857195E-11	-1.32350484E-03	*APD	102				
1841- *APD	102	-5.44280315E-11	9.99277050E-12	-5.85998697E-12	-1.31690805E-03	*APD	103				
1842- *APC	103	-4.25059571E-11	6.16457926E-12	-2.81194946E-12	-1.31125166E-03	*APD	104				
1843- *APD	104	-2.90928115E-11	2.84414332E-12	-8.02271715E-13	-1.30869355E-03	*APD	105				
1844- *APD	105	-2.1664958E-11	1.43552791E-12	-2.50289427E-13	-1.30652124E-03	*APD	106				
1845- *APD	106	-3.40921995E-12	2.64436503E-14	-2.36859423E-16	-1.30660087E-03	*APD	107				
1846- *APC	107	-1.11609394E-11	3.60304614E-13	-1.84689571E-14		*APD	108				
1847- DMI	*PDU2	26	1		2.31648159E-10	*APD	109				
1848- *APC	109	-8.81360174E-05	-2.85967500E-11	2.13587915E-12	4.81634288E-10	*APD	110				
1849- *APD	110	-2.60638772E-04	-1.37113390E-10	1.86776150E-11	7.20452364E-10	*APD	111				
1850- *APD	111	-5.54427343E-04	-4.46644943E-10	8.48458942E-11	6.34574615E-10	*APD	112				

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
1851-APD 112	-2.95309816E-04	-1.57617905E-10	2.23581431E-11	6.11591000E-10	APD 113					
1952-APD 113	-1.69203384E-04	-5.98360805E-11	5.79478219E-12	6.05666628E-10	APD 114					
1953-APD 114	-1.26794010E-04	-3.42889606E-11	2.51802312E-12	6.02647932E-10	APD 115					
1854-APC 115	-9.90206900E-05	-2.11529821E-11	1.20828781E-12	6.00059336E-10	APD 116					
1855-APD 116	-6.77737844E-05	-9.75932703E-12	3.44734278E-13	5.98888716E-10	APD 117					
1856-APD 117	-4.50759121E-05	-4.92583752E-12	1.07548790E-13	5.97894623E-10	APD 118					
1857-APD 118	-7.94202242E-06	-9.07381266E-14	1.01777997E-16	5.97931038E-10	APD 119					
1858-APD 119	-2.60001980E-05	-1.23634089E-12	7.93606852E-15		APD 120					
1859-DMI	*PDU2	27	1	-1.41684914E-10	APD 121					
1860-APD 121	1.10646728E-10	-2.75811035E-05	-1.40366737E-11	-2.94585911E-10	APD 122					
1861-APD 122	3.27208038E-10	-1.32243658E-04	-1.22746494E-10	-4.40656400E-10	APD 123					
1862-APD 123	7.46249285E-10	-4.30781860E-04	-5.57594193E-10	-3.88130195E-10	APD 124					
1863-APD 124	3.70734554E-10	-1.52019944E-04	-1.46934284E-10	-3.74072551E-10	APD 125					
1864-APD 125	2.12419402E-10	-5.77109458E-05	-3.80824122E-11	-3.70449005E-10	APD 126					
1865-APD 126	1.59178296E-10	-3.30711482E-05	-1.65480546E-11	-3.68602482E-10	APD 127					
1866-APD 127	1.24311436E-10	-2.04017124E-05	-7.94068544E-12	-3.67019304E-10	APD 128					
1867-APD 128	8.50838011E-11	-9.41271355E-06	-2.26554019E-12	-3.66303210E-10	APD 129					
1868-APD 129	6.16103418E-11	-4.75089109E-06	-7.06794053E-13	-3.65695252E-10	APD 130					
1869-APC 130	9.57048364E-12	-8.75154456E-08	-6.68869308E-16	-3.65717678E-10	APD 131					
1870-APD 131	3.26408761E-11	-1.19243032E-06	-5.21546205E-14		APD 132					
1871-DMI	*PDU2	28	1	8.91048346E-11	APD 133					
1872-APD 133	2.33458142E-10	5.40372469E-11	-8.57098985E-06	1.85263554E-10	APD 134					
1873-APD 134	6.90390412E-10	2.59093413E-10	-7.45507162E-05	2.77126322E-10	APD 135					
1874-APD 135	1.57454316E-09	8.43993320E-10	-3.40474769E-04	2.44092746E-10	APD 136					
1875-APD 136	7.82228726E-10	2.97839309E-10	-8.97201244E-05	2.35252040E-10	APD 137					
1876-APD 137	4.48192594E-10	1.13068013E-10	-2.32536549E-05	2.32973196E-10	APD 138					
1877-APD 138	3.35856898E-10	6.47934068E-11	-1.01044770E-05	2.31812125E-10	APD 139					
1878-APD 139	2.62289968E-10	3.99713040E-11	-4.84869361E-06	2.30816435E-10	APD 140					
1879-APD 140	1.79521925E-10	1.84414983E-11	-1.38337055E-06	2.30366157E-10	APD 141					
1880-APD 141	1.29994265E-10	9.30800576E-12	-4.31578371E-07	2.29983754E-10	APD 142					
1891-APD 142	2.10371442E-11	1.71461369E-13	-4.08420853E-10	2.29997799E-10	APD 143					
1882-APD 143	6.88703816E-11	2.33622496E-12	-3.18463407E-08		APD 144					
1883-DMI	*PDU2	29	1	-5.20150643E-04	APD 145					
1884-APC 145	-1.91106020E-11	5.55420974E-12	-1.33165094E-12	-1.05456519E-03	APD 146					
1885-APD 146	-5.37881406E-11	2.59424981E-11	-1.14556706E-11	-1.44622521E-03	APD 147					
1886-APD 147	-1.05861042E-10	7.49965229E-11	-4.83635770E-11	-1.95259857E-03	APD 148					
1887-APD 148	-2.20069074E-10	2.15015297E-10	-1.84008711E-10	-1.75282895E-03	APD 149					
1889-APD 149	-1.10309470E-10	7.34660527E-11	-4.48929227E-11	-1.70644675E-03	APD 150					
1899-APD 150	-7.84338150E-11	3.95879718E-11	-1.84385146E-11	-1.68540305E-03	APD 151					
1890-APC 151	-5.67035060E-11	2.35614861E-11	-8.48055046E-12	-1.66902132E-03	APD 152					
1891-APD 152	-4.00500882E-11	1.05175643E-11	-2.29270682E-12	-1.66221359E-03	APD 153					
1892-APD 153	-2.87946889E-11	5.25742297E-12	-7.09008861E-13	-1.65664707E-03	APD 154					
1893-APD 154	-4.64242707E-12	9.67987084E-14	-6.68121378E-16	-1.65685150E-03	APD 155					
1894-APC 155	-1.52017149E-11	1.31899092E-12	-5.21547324E-14		APD 156					
1895-DMI	*PDU2	30	1	2.77122547E-10	APD 157					
1896-APD 157	-5.56003652E-05	-1.16320460E-11	2.77582644E-13	5.61844793E-10	APD 158					
1897-APD 158	-1.56491151E-04	-5.33698502E-11	2.38793447E-12	7.70510766E-10	APD 159					
1898-APC 159	-3.07591868E-04	-1.54285570E-10	1.00813880E-11	1.04029341E-09	APD 160					
1899-APD 160	-6.40268670E-04	-4.42337056E-10	3.83566096E-11	9.33861211E-10	APD 161					
1903-APD 161	-3.20934225E-04	-1.51137033E-10	9.35793283E-12	9.09150089E-10	APD 162					

EXTERNAL TANK W. FLUID  
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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
1901- *APD 162 -2.28195291E-04 -8.14418255E-11 3.84350971E-12 8.97938612E-10 *APD 163
1902- *APD 163 -1.73701352E-04 -4.84715462E-11 1.76777083E-12 8.89210705E-10 *APD 164
1903- *APC 164 -1.16521696E-04 -2.16371088E-11 4.77914746E-13 8.85583828E-10 *APD 165
1904- *APC 165 -8.37752596E-05 -1.08157606E-11 1.47792857E-13 8.82617979E-10 *APD 166
1905- *APD 166 -1.35066739E-05 -1.99137798E-13 1.39269925E-16 8.82727003E-10 *APD 167
1906- *APD 167 -4.42278833E-05 -2.71347615E-12 1.08716543E-14 *APD 168
1907- DMI *PDU2 31 1 -1.39595280E-10 *APD 169
1908- *APD 169 6.77139317E-11 -1.19534352E-05 -4.23894947E-12 -2.83018498E-10 *APD 170
1909- *APD 170 1.90585631E-10 -5.48444368E-05 -3.64660108E-11 -3.88130195E-10 *APD 171
1910- *APD 171 3.75093734E-10 -1.58548428E-04 -1.53952309E-10 -5.24027932E-10 *APD 172
1911- *APC 172 7.75762921E-10 -4.54558758E-04 -5.85741677E-10 -4.70414818E-10 *APD 173
1912- *APC 173 3.90855570E-10 -1.55312897E-04 -1.42904466E-10 -4.57966998E-10 *APD 174
1913- *APD 174 2.77911694E-10 -8.36920372E-05 -5.86940219E-11 -4.52319515E-10 *APD 175
1914- *APD 175 2.11545378E-10 -4.98107984E-05 -2.69955308E-11 -4.47923032E-10 *APD 176
1915- *APC 176 1.41908096E-10 -2.22349336E-05 -7.29820891E-12 -4.46096049E-10 *APD 177
1916- *APD 177 1.02027234E-10 -1.11145964E-05 -2.25693682E-12 -4.44602133E-10 *APD 178
1917- *APC 178 1.64493419E-11 -2.04639946E-07 -2.12678326E-15 -4.44656978E-10 *APD 179
1918- *APD 179 5.38637329E-11 -2.78844800E-06 -1.66020409E-13 *APD 180
1919- DMI *PDU2 32 1 9.75156206E-11 *APD 181
1920- *APD 181 1.51520158E-10 2.47442344E-11 -2.57645934E-06 1.97705421E-10 *APD 182
1921- *APD 182 4.26463975E-10 1.13530865E-10 -2.21642695E-03 2.71132006E-10 *APD 183
1922- *APD 183 8.39328829E-10 3.28203464E-10 -9.35731655E-03 3.66064734E-10 *APD 184
1923- *APD 184 1.74483735E-09 9.40960421E-10 -3.56017379E-03 3.28612915E-10 *APD 185
1924- *APD 185 8.74598616E-10 3.21505711E-10 -8.68582138E-03 3.19917204E-10 *APD 186
1925- *APC 186 6.21869667E-10 1.73246889E-10 -3.56745877E-05 3.15972137E-10 *APD 187
1926- *APD 187 4.73364681E-10 1.03110964E-10 -1.64080411E-05 3.12900816E-10 *APD 188
1927- *APD 188 3.17540660E-10 4.60274735E-11 -4.43589670E-06 3.11624504E-10 *APD 189
1928- *APC 189 2.28301364E-10 2.30077901E-11 -1.37177994E-06 3.10581116E-10 *APD 190
1929- *APD 190 3.68079039E-11 4.23615353E-13 -1.29267197E-09 3.10619308E-10 *APD 191
1930- *APD 191 1.20528254E-10 5.77223425E-12 -1.00908210E-07 *APD 192
1931- DMI *PDU2 33 1 -4.60750423E-04 *APD 193
1932- *APD 193 -1.36852318E-11 1.69439116E-12 -2.94617358E-13 -9.26979119E-04 *APD 194
1933- *APD 194 -3.78297393E-11 7.63203476E-12 -2.51436025E-12 -1.24113099E-03 *APD 195
1934- *APD 195 -7.02942843E-11 2.08690565E-11 -1.02185847E-11 -1.56078464E-03 *APD 196
1935- *APD 196 -1.27839711E-10 5.38506184E-11 -3.65972808E-11 -2.09462736E-03 *APD 197
1936- *APD 197 -2.93052027E-10 1.80050808E-10 -1.70857259E-10 -1.90264685E-03 *APD 198
1937- *APD 198 -1.78867185E-10 8.45712667E-11 -6.39039238E-11 -1.82928541E-03 *APD 199
1939- *APD 199 -1.25782093E-10 4.59797755E-11 -2.71396100E-11 -1.78166432E-03 *APD 200
1939- *APD 200 -7.95616906E-11 1.88202509E-11 -6.54988390E-12 -1.76539063E-03 *APD 201
1940- *APC 201 -5.63169927E-11 9.24086155E-12 -2.00388491E-12 -1.75287202E-03 *APD 202
1941- *APD 202 -9.00772686E-12 1.69938011E-13 -1.86303838E-15 -1.75333186E-03 *APD 203
1942- *APC 203 -2.95107688E-11 2.31590528E-12 -1.45953779E-13 *APD 204
1943- DMI *PDU2 34 1 2.54593679E-10 *APD 205
1944- *APD 205 -3.05918511E-05 -4.07573888E-12 6.76054807E-14 5.12214715E-10 *APD 206
1945- *APD 206 -8.45643226E-05 -1.83583149E-11 5.76967293E-13 6.85803636E-10 *APD 207
1946- *APD 207 -1.57135326E-04 -5.01990394E-11 2.34484567E-12 8.62432348E-10 *APD 208
1947- *APC 208 -2.85771908E-04 -1.29533897E-10 8.39793686E-12 1.15741439E-09 *APD 209
1949- *APD 209 -6.55086711E-04 -4.33099334E-10 3.92064020E-11 1.05133302E-09 *APD 210
1949- *APD 210 -3.95838202E-04 -2.03430231E-10 1.46639506E-11 1.01079611E-09 *APD 211
1950- *APD 211 -2.61172339E-04 -1.10601112E-10 6.22769458E-12 9.84482496E-10 *APD 212

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CARD

COUNT	1	2	3	4	5	6	7	8	9	10
1951-APC	212	-1.77851616E-04	-4.52708010E-11	1.50299391E-12	9.75490133E-10	*APD	213			
1952-APD	213	-1.25890598E-04	-2.22282331E-11	4.59829278E-13	9.68573000E-10	*APD	214			
1953-APD	214	-2.01357907E-05	-4.08773980E-13	4.27509175E-16	9.68826797E-10	*APD	215			
1954-APC	215	-6.55681536E-05	-5.57074786E-12	3.34918386E-14			*APD	216		
1955-DMI	*PDU2	35	1					-1.17782423E-10	*APD	217
1956-APD	217	3.55855201E-11	-4.35144921E-06	-9.78670270E-13	-2.36965114E-10	*APD	218			
1957-APC	218	9.54738875E-11	-1.96001929E-05	-8.35229282E-12	-3.17272431E-10	*APD	219			
1958-APC	219	1.84639907E-10	-5.35948348E-05	-3.39444584E-11	-3.98985955E-10	*APD	220			
1959-APC	220	3.36156436E-10	-1.38296411E-04	-1.21570198E-10	-5.35453237E-10	*APD	221			
1960-APD	221	7.70585151E-10	-4.62397002E-04	-5.67559555E-10	-4.86376717E-10	*APD	222			
1961-APC	222	4.70333994E-10	-2.17191584E-04	-2.12278375E-10	-4.67623273E-10	*APD	223			
1962-APC	223	3.30745875E-10	-1.18082899E-04	-9.01533431E-11	-4.55449900E-10	*APD	224			
1963-APD	224	2.09208692E-10	-4.83332260E-05	-2.17576374E-11	-4.51289672E-10	*APD	225			
1964-APD	225	1.48086418E-10	-2.37319036E-05	-6.65657893E-12	-4.48089565E-10	*APD	226			
1965-APD	226	2.36659421E-11	-4.36426149E-07	-6.18870732E-15	-4.48207249E-10	*APD	227			
1966-APD	227	7.75990244E-11	-5.94758967E-06	-4.84834503E-13			*APD	228		
1967-DMI	*PDU2	36	1					7.59218383E-11	*APD	229
1968-APC	229	8.72795064E-11	8.71053230E-12	-6.22620917E-07	1.52746399E-10	*APD	230			
1969-APD	230	2.41541009E-10	3.92347821E-11	-5.31364913E-06	2.04511935E-10	*APD	231			
1970-APC	231	4.48825421E-10	1.07283710E-10	-2.15951441E-05	2.57183830E-10	*APD	232			
1971-APC	232	8.16249957E-10	2.76835443E-10	-7.73417996E-05	3.45149909E-10	*APD	233			
1972-APC	233	1.87112370E-09	9.25605592E-10	-3.61076090E-04	3.13515436E-10	*APD	234			
1973-APD	234	1.14205800E-09	4.34764225E-10	-1.35049500E-04	3.01427105E-10	*APD	235			
1974-APC	235	8.03112243E-10	2.36372921E-10	-5.73547004E-05	2.93580271E-10	*APD	236			
1975-APC	236	5.07997422E-10	9.67512459E-11	-1.38420046E-05	2.90898639E-10	*APD	237			
1976-APC	237	3.55581032E-10	4.75054440E-11	-4.23485290E-06	2.88835844E-10	*APD	238			
1977-APC	238	5.75138825E-11	8.73617964E-13	-3.93719546E-09	2.88911561E-10	*APD	239			
1978-APC	239	1.8E424817E-10	1.19056154E-11	-3.08447113E-07			*APD	240		
1979-DMI	*PDU2	37	1					-3.31033487E-04	*APD	241
1980-APC	241	-7.31885646E-12	3.00114317E-13	-1.16063300E-13	-6.64598774E-04	*APD	242			
1981-APC	242	-2.01004630E-11	1.33939040E-12	-9.84228324E-13	-8.84429086E-04	*APD	243			
1982-APD	243	-2.65802527E-11	3.55715978E-12	-3.87247352E-12	-1.09337433E-03	*APD	244			
1983-APD	244	-6.31238256E-11	8.63131355E-12	-1.31090807E-11	-1.36908656E-03	*APD	245			
1984-APD	245	-1.24213168E-10	2.51554610E-11	-5.57317525E-11	-1.67131494E-03	*APD	246			
1985-APD	246	-2.27478286E-10	6.04597483E-11	-1.70091163E-10	-1.50491484E-03	*APD	247			
1986-APD	247	-1.37523853E-10	2.83939816E-11	-6.44301695E-11	-1.41614815E-03	*APD	248			
1987-APC	248	-7.71195607E-11	9.79603985E-12	-1.25242672E-11	-1.39395823E-03	*APD	249			
1988-APC	249	-5.34254863E-11	4.67471114E-12	-3.68106847E-12	-1.37811201E-03	*APD	250			
1989-APD	250	-8.45667113E-12	8.55378051E-14	-3.31264718E-15	-1.37869385E-03	*APD	251			
1990-APC	251	-2.77237538E-11	1.16635954E-12	-2.61812653E-13			*APD	252		
1991-DMI	*PDU2	38	1					1.70238421E-10	*APD	253
1992-APD	253	-1.69524574E-05	-1.85077214E-12	9.36476577E-15	3.41778605E-10	*APD	254			
1993-APD	254	-4.65581397E-05	-8.25987889E-12	7.94141771E-14	4.54829285E-10	*APD	255			
1994-APD	255	-8.47298070E-05	-2.19366192E-11	3.12457146E-13	5.62282221E-10	*APD	256			
1995-APD	256	-1.46211940E-04	-5.32283800E-11	1.05772856E-12	7.04070802E-10	*APD	257			
1996-APD	257	-2.87711388E-04	-1.55131047E-10	4.49681264E-12	8.59495808E-10	*APD	258			
1997-APC	258	-5.26901335E-04	-3.72848641E-10	1.37240956E-11	7.73922482E-10	*APD	259			
1998-APD	259	-3.18542589E-04	-1.75102613E-10	5.19865834E-12	7.28272997E-10	*APD	260			
1999-APD	260	-1.76625867E-04	-6.04111206E-11	1.01054148E-12	7.16861459E-10	*APD	261			
2000-APC	261	-1.23747959E-04	-2.88284396E-11	2.97013282E-13	7.08712422E-10	*APD	262			

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COUNT.	1	2	3	4	5	6	7	8	9	10
2001- *APD	262	-1.95879402E-05	-5.27502575E-13	2.67286540E-16	7.09011516E-10	*APD	263			
2002- *APD	263	-6.42157684E-05	-7.19281752E-12	2.11248052E-14						*APD 264
2003- DMI	*PDU2		39	1						
2004- *APD	265	2.06889367E-11	-1.86453326E-06	-3.34134521E-13	-2.20252316E-10	*APD	266			
2005- *APD	266	5.68200070E-11	-8.32129081E-06	-2.83349559E-12	-2.93105540E-10	*APD	267			
2006- *APD	267	1.03405062E-10	-2.20997172E-05	-1.11484606E-11	-3.62351260E-10	*APD	268			
2007- *APD	268	1.78438458E-10	-5.36241278E-05	-3.77397141E-11	-4.53723947E-10	*APD	269			
2008- *APD	269	3.51125795E-10	-1.56284441E-04	-1.60446115E-10	-5.53884494E-10	*APD	270			
2009- *APD	270	6.43035625E-10	-3.75620788E-04	-4.89675189E-10	-4.98738384E-10	*APD	271			
2010- *APD	271	3.88752364E-10	-1.76404501E-04	-1.85487944E-10	-4.69320582E-10	*APD	272			
2011- *APD	272	2.18001603E-10	-6.08602713E-05	-3.60560887E-11	-4.61966687E-10	*APD	273			
2012- *APD	273	1.51023194E-10	-2.90427706E-05	-1.05974240E-11	-4.56715110E-10	*APD	274			
2013- *APD	274	2.39053083E-11	-5.31424519E-07	-9.53677445E-15	-4.56908067E-10	*APD	275			
2014- *APD	275	7.8169547CE-11	-7.24629535E-06	-7.53732255E-13						*APD 276
2015- DMI	*PDU2		40	1						
2016- *APD	277	4.67615113E-11	3.72877857E-12	-2.02375475E-07	1.39822806E-10	*APD	278			
2017- *APD	278	1.28425562E-10	1.66412856E-11	-1.71616466E-06	1.86072227E-10	*APD	279			
2018- *APD	279	2.33717934E-10	4.41960357E-11	-6.75229512E-06	2.30031522E-10	*APD	280			
2019- *APD	280	4.03309608E-10	1.07239981E-10	-2.28578283E-05	2.88037594E-10	*APD	281			
2020- *APD	281	7.93620503E-10	3.12544657E-10	-9.71775007E-05	3.51622509E-10	*APD	282			
2021- *APD	282	1.45340029E-09	7.51183782E-10	-2.96581769E-04	3.16614068E-10	*APD	283			
2022- *APD	283	8.78664919E-10	3.52781582E-10	-1.12344598E-04	2.97938785E-10	*APD	284			
2023- *APD	284	4.92730967E-10	1.21711155E-10	-2.18381174E-05	2.93270297E-10	*APD	285			
2024- *APD	285	3.41345174E-10	5.80810677E-11	-6.41854876E-06	2.89936519E-10	*APD	286			
2025- *APD	286	5.40312101E-11	1.06276706E-12	-5.77614401E-09	2.90058866E-10	*APD	287			
2026- *APD	287	1.77132198E-10	1.44914740E-11	-4.56513476E-07						*APD 288
2027- DMI	*PDU2		41	1						
2028- *APD	289	-5.57510635E-12	3.39901447E-13	-4.57792373E-14	-6.31507486E-04	*APD	290			
2029- *APD	290	-1.52589330E-11	1.50912182E-12	-3.86646281E-13	-8.37888569E-04	*APD	291			
2030- *APD	291	-2.74787137E-11	3.94226752E-12	-1.48701971E-12	-1.02818967E-03	*APD	292			
2031- *APD	292	-4.62181265E-11	9.22871935E-12	-4.82489222E-12	-1.25327823E-03	*APD	293			
2032- *APD	293	-8.40191666E-11	2.45697906E-11	-1.89407101E-11	-1.43286469E-03	*APD	294			
2033- *APD	294	-1.32281963E-10	5.10095299E-11	-5.15592569E-11	-1.72149623E-03	*APD	295			
2034- *APD	295	-2.32626007E-10	1.16520266E-10	-1.47247325E-10	-1.50195602E-03	*APD	296			
2035- *APD	296	-1.05879411E-10	3.46390833E-11	-2.76179218E-11	-1.45797106E-03	*APD	297			
2036- *APD	297	-7.29542260E-11	1.57392988E-11	-7.86146061E-12	-1.43006258E-03	*APD	298			
2037- *APD	298	-1.13209771E-11	2.84701082E-13	-7.30228798E-15	-1.43108750E-03	*APD	299			
2038- *APD	299	-3.71613573E-11	3.98713020E-12	-5.72212687E-13						*APD 300
2039- DMI	*PDU2		42	1						
2040- *APD	301	-1.27824287E-05	-1.08541995E-12	-9.37890783E-16	1.45395945E-10	*APD	302			
2041- *APD	302	-3.45852198E-05	-4.31913641E-12	-7.92131999E-15	3.86860988E-10	*APD	303			
2042- *APD	303	-6.30023424E-05	-1.25889915E-11	-3.04649562E-14	4.74724704E-10	*APD	304			
2043- *APD	304	-1.05967483E-04	-2.94704122E-11	-9.88487720E-14	5.78650239E-10	*APD	305			
2044- *APD	305	-1.92636508E-04	-7.84596416E-11	-3.88043167E-13	6.61567023E-10	*APD	306			
2045- *APD	306	-3.03291716E-04	-1.62890673E-10	-1.05630695E-12	7.94830868E-10	*APD	307			
2046- *APD	307	-5.35650412E-04	-3.72088360E-10	-3.01669280E-12	6.93467062E-10	*APD	308			
2047- *APD	308	-2.51927879E-04	-1.10614309E-10	-5.65815624E-13	6.73158862E-10	*APD	309			
2048- *APD	309	-1.67267164E-04	-5.02609343E-11	-1.61059696E-13	6.60273169E-10	*APD	310			
2049- *APD	310	-2.59563676E-05	-9.09146781E-13	-1.49603833E-16	6.60746347E-10	*APD	311			
2050- *APD	311	-8.52024095E-05	-1.24129188E-11	-1.17230647E-14						*APD 312



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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
2051-DMI *PDU2 43 1 -1.03449249E-10 *APD 313
2052-APD 313 1.56131635E-11 -1.11919144E-06 -1.58855568E-13 -2.07454234E-10*APD 314
2053-APD 314 4.27328867E-11 -4.96907796E-06 -1.34167590E-12 -2.75251599E-10*APD 315
2054-APD 315 7.69545538E-11 -1.29806831E-05 -5.16001217E-12 -3.37766703E-10*APD 316
2055-APD 316 1.29434546E-10 -3.03873530E-05 -1.67425379E-11 -4.11709777E-10*APD 317
2056-APD 317 2.35296671E-10 -8.09008197E-05 -6.57249394E-11 -4.70705031E-10*APD 318
2057-APD 318 3.7C457443E-10 -1.67958831E-04 -1.78912468E-10 -5.65522296E-10*APD 319
2058-APD 319 6.54273080E-10 -3.83665552E-04 -5.10953280E-10 -4.93401986E-10*APD 320
2059-APD 320 3.07718739E-10 -1.14055932E-04 -9.58352148E-11 -4.78952655E-10*APD 321
2060-APD 321 2.04309361E-10 -5.18247398E-05 -2.72795397E-11 -4.69784656E-10*APD 322
2061-APD 322 3.17045556E-11 -9.37433811E-07 -2.53392007E-14 -4.70121275E-10*APD 323
2062-APD 323 1.04070932E-10 -1.27991316E-05 -1.98559832E-12 *APD 324
2063-DMI *PDU2 44 1 5.62752900E-11 *APD 325
2064-APD 325 3.41151274E-11 2.14798665E-12 -9.49745527E-08 1.12852894E-10*APD 326
2065-APD 326 9.33723793E-11 9.53680711E-12 -8.02144427E-07 1.49734017E-10*APD 327
2066-APD 327 1.68147524E-10 2.49129190E-11 -3.08500239E-06 1.83741564E-10*APD 328
2067-APD 328 2.82817547E-10 5.83203347E-11 -1.00098223E-05 2.23965790E-10*APD 329
2068-APD 329 5.14129184E-10 1.55267327E-10 -3.92947841E-05 2.56058508E-10*APD 330
2069-APD 330 8.05458500E-10 3.22351701E-10 -1.06965919E-04 3.07638137E-10*APD 331
2070-APD 331 1.42960244E-09 7.36342765E-10 -3.05482186E-04 2.68405298E-10*APD 332
2071-APD 332 6.72372824E-10 2.18899648E-10 -5.72967401E-05 2.60545141E-10*APD 333
2072-APD 333 4.46420678E-10 9.94636318E-11 -1.63095392E-05 2.55557797E-10*APD 334
2073-APD 334 6.92752106E-11 1.79915111E-12 -1.51494781E-08 2.55740984E-10*APD 335
2074-APD 335 2.27397490E-10 2.45644755E-11 -1.18712433E-06 *APD 336
2075-DMI *PDU2 45 1 -2.32773687E-04 *APD 337
2076-APD 337 -2.02836446E-12 1.60874460E-13 -1.12463241E-14 -4.66326019E-04*APD 338
2077-APD 338 -5.52435336E-12 7.10717238E-13 -9.46177815E-14 -6.17195852E-04*APD 339
2078-APD 339 -5.87753195E-12 1.82779746E-12 -3.54026324E-13 -7.53247179E-04*APD 340
2079-APD 340 -1.62829056E-11 4.13988028E-12 -1.08847046E-12 -9.03021311E-04*APD 341
2080-APD 341 -2.79112705E-11 1.01063472E-11 -3.81444269E-12 -9.97489085E-04*APD 342
2081-APD 342 -3.85585864E-11 1.76851728E-11 -8.36324152E-12 -1.11112604E-03*APD 343
2082-APD 343 -5.77075193E-11 3.48097107E-11 -2.30460234E-11 -1.46357669E-03*APD 344
2083-APD 344 -1.42846679E-10 1.36466963E-10 -1.42016343E-10 -1.29596074E-03*APD 345
2084-APD 345 -7.60967261E-11 5.05100267E-11 -3.68623465E-11 -1.23038120E-03*APD 346
2085-APD 346 -1.10508538E-11 9.28335533E-13 -5.80583758E-14 -1.23278913E-03*APD 347
2086-APD 347 -3.64363817E-11 1.26521319E-11 -4.05094014E-12 *APD 348
2087-DMI *PDU2 46 1 1.26886029E-10 *APD 349
2088-APD 349 -6.55082931E-06 -3.82674632E-13 8.07145530E-16 2.54196442E-10*APD 350
2089-APD 350 -1.78738119E-05 -1.69059385E-12 6.79069363E-15 3.36436212E-10*APD 351
2090-APD 351 -3.19005921E-05 -4.34780944E-12 2.54083694E-14 4.10598444E-10*APD 352
2091-APD 352 -5.25874930E-05 -9.84759670E-12 7.81192602E-14 4.92241137E-10*APD 353
2092-APD 353 -9.01425810E-05 -2.40401171E-11 2.73761428E-13 5.43735945E-10*APD 354
2093-APD 354 -1.25821112E-04 -4.20680157E-11 6.00227442E-13 6.05680173E-10*APD 355
2094-APD 355 -1.86372883E-04 -8.28023899E-11 1.65400679E-12 7.97802491E-10*APD 356
2095-APD 356 -4.61339252E-04 -3.24615890E-10 1.01924727E-11 7.06434244E-10*APD 357
2096-APD 357 -2.45762756E-04 -1.20149002E-10 2.64560075E-12 6.70686617E-10*APD 358
2097-APD 358 -3.56899545E-05 -2.20824747E-12 4.16683289E-15 6.71999123E-10*APD 359
2098-APD 359 -1.17675355E-04 -3.00958147E-11 2.90734830E-13 *APD 360
2099-DMI *PDU2 47 1 -9.02282138E-11 *APD 361
2100-APD 361 8.42521452E-12 -3.89951879E-07 -3.38406637E-14 -1.80758353E-10*APD 362

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## S O R T E D B U L K D A T A E C H O

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2101-APD 362 2.29880281E-11 -1.72274304E-06 -2.84708997E-13 -2.39238629E-10\*APD 363  
2102-APD 363 4.10282919E-11 -4.43049157E-06 -1.06527981E-12 -2.91975111E-10\*APD 364  
2103-APC 364 6.76343148E-11 -1.00348670E-05 -3.27525507E-12 -3.50030893E-10\*APD 365  
2104-APD 365 1.15935025E-10 -2.44972907E-05 -1.14778178E-11 -3.86646713E-10\*APD 366  
2105-APD 366 1.61822250E-10 -4.28680214E-05 -2.51653420E-11 -4.30697034E-10\*APD 367  
2106-APD 367 2.39699594E-10 -8.43770395E-05 -6.93464591E-11 -5.67310440E-10\*APD 368  
2107-APD 368 5.93342042E-10 -3.30789248E-04 -4.27333058E-10 -9.02343056E-10\*APD 369  
2108-APD 369 3.16082716E-10 -1.22433863E-04 -1.10920370E-10 -4.76922946E-10\*APD 370  
2109-APD 370 4.59019073E-11 -2.25024178E-06 -1.74700098E-13 -4.77856199E-10\*APD 371  
2110-APD 371 1.51345755E-10 -3.06681468E-05 -1.21894500E-11 \*APD 372  
2111-DMI \*PDU2 48 1 3.78383852E-11 \*APD 373  
2112-APD 373 1.82853455E-11 7.66725930E-13 -2.06847695E-08 7.58033913E-11\*APD 374  
2113-APD 374 4.98912162E-11 3.38726963E-12 -1.74025502E-07 1.00327927E-10\*APD 375  
2114-APD 375 8.50441887E-11 8.71126175E-12 -6.51141875E-07 1.22443666E-10\*APD 376  
2115-APC 376 1.46787596E-10 1.97306199E-11 -2.00196700E-06 1.46790136E-10\*APD 377  
2116-APD 377 2.51615173E-10 4.81667345E-11 -7.01570207E-06 1.62146283E-10\*APD 378  
2117-APD 378 3.51204621E-10 8.42873826E-11 -1.53820583E-05 1.80618492E-10\*APD 379  
2118-APD 379 5.20222976E-10 1.65902680E-10 -4.23873280E-05 2.37910802E-10\*APD 380  
2119-APD 380 1.26773747E-09 6.50399956E-10 -2.61202920E-04 2.10664181E-10\*APD 381  
2120-APD 381 6.85998369E-10 2.40730103E-10 -6.77989738E-07 2.00003504E-10\*APD 382  
2121-APD 382 9.96214777E-11 4.42443998E-12 -1.06783716E-07 2.00395381E-10\*APD 383  
2122-APC 383 3.28467475E-10 6.02999040E-11 -7.45067973E-07 \*APD 384  
2123-DMI \*PDU2 49 1 -3.048492822E-04 \*APD 385  
2124-APD 385 -1.31670369E-12 5.38906789E-14 -2.26677176E-13 -5.07342194E-04\*APD 386  
2125-APD 386 -3.58751657E-12 2.37598461E-13 -1.90964594E-14 -3.93114286E-04\*APD 387  
2126-APD 387 -6.37695292E-12 6.07493873E-13 -7.10383358E-14 -4.78747068E-04\*APD 388  
2127-APD 388 -1.04408400E-11 1.36269641E-12 -2.16499236E-13 -5.71027165E-04\*APD 389  
2128-APD 389 -1.76201415E-11 3.26764310E-12 -7.50596959E-13 -6.26603840E-04\*APD 390  
2129-APD 390 -2.40702874E-11 5.55734625E-12 -1.58100182E-12 -6.88333530E-04\*APD 391  
2130-APC 391 -3.41712492E-11 1.04153361E-11 -4.21933929E-12 -8.27057520E-04\*APD 392  
2131-APD 392 -6.78672535E-11 3.32606859E-11 -2.37093400E-11 -1.07780774E-03\*APD 393  
2132-APD 393 -1.55176150E-10 1.09664181E-10 -1.09990114E-10 -9.01979161E-04\*APD 394  
2133-APD 394 -1.65240044E-11 1.40306603E-12 -1.13111343E-13 -9.08435555E-04\*APD 395  
2134-APC 395 -5.58528224E-11 2.00576777E-11 -8.63439702E-12 \*APD 396  
2135-DMI \*PDU2 50 1 7.37993000E-11 \*APD 397  
2136-APD 397 -3.04290370E-06 -1.26943378E-13 4.93270484E-16 1.47775875E-10\*APD 398  
2137-APC 398 -8.29075088E-06 -5.59680340E-13 4.18556397E-15 1.95373481E-10\*APD 399  
2138-APD 399 -1.47417595E-05 -1.43099508E-12 1.54586054E-14 2.37932118E-10\*APD 400  
2139-APD 400 -2.41287780E-05 -3.20992972E-12 4.71122537E-14 2.83794099E-10\*APD 401  
2140-APD 401 -4.67201442E-05 -7.69717016E-12 1.63336846E-13 3.11415116E-10\*APD 402  
2141-APC 402 -5.56264567E-05 -1.30907299E-11 3.44040822E-13 3.42094131E-10\*APD 403  
2142-APD 403 -7.89697369E-05 -2.45340692E-11 9.18167452E-13 4.11038314E-10\*APD 404  
2143-APD 404 -1.56241197E-04 -7.83479531E-11 5.15937206E-12 5.35658629E-10\*APD 405  
2144-APD 405 -3.58612044E-04 -2.58321808E-10 2.39348680E-11 4.48273640E-10\*APD 406  
2145-APD 406 -3.81869613E-05 -3.30502466E-12 2.46140863E-14 4.51482407E-10\*APD 407  
2146-APD 407 -1.25075866E-04 -4.72473172E-11 1.87892497E-12 \*APD 408  
2147-DMI \*PDU2 51 1 -4.77224232E-11 \*APD 409  
2148-APC 409 3.70873211E-12 -1.26598252E-07 -6.84359253E-15 -9.55595048E-11\*APD 410  
2149-APD 410 1.01048796E-11 -5.58158661E-07 -5.76939684E-14 -1.26338565E-10\*APD 411  
2150-APD 411 1.75674470E-11 -1.42710451E-06 -2.14471399E-13 -1.53859175E-10\*APD 412

SORTED BULK DATA ECHO

CARD COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2151-*	APD 412	2.94084757E-11	-3.20120216E-06	-6.53631500E-13	-1.83516022E-10	*APD 413				
2152-*	APC 413	4.96302582E-11	-7.67624260E-06	-2.26612132E-12	-2.01377179E-10	*APD 414				
2153-*	APD 414	6.77982670E-11	-1.30551389E-05	-4.77319313E-12	-2.21215768E-10	*APD 415				
2154-*	APC 415	9.62493973E-11	-2.44673720E-05	-1.27385793E-11	-2.65798494E-10	*APD 416				
2155-*	APD 416	1.91160185E-10	-7.81349372E-05	-7.15806997E-11	-3.46384477E-10	*APD 417				
2156-*	APD 417	4.37081038E-10	-2.57619424E-04	-3.32070371E-10	-2.89876789E-10	*APD 418				
2157-*	APD 418	4.65427974E-11	-3.29603881E-06	-3.41493760E-13	-2.91951796E-10	*APD 419				
2158-*	APC 419	1.57319408E-10	-4.71188541E-05	-2.60680505E-11		*APD 420				
2159-DNI	*PDU2		52		1			2.62975336E-11	*APD 421	
2160-*	APD 421	8.30594708E-12	2.48046429E-13	-4.13671231E-09	5.26582528E-11	*APD 422				
2161-*	APD 422	2.26305363E-11	1.09361131E-12	-3.48498119E-08	6.96191160E-11	*APD 423				
2162-*	APC 423	4.02392841E-11	2.79615480E-12	-1.29640455E-07	8.47844156E-11	*APD 424				
2163-*	APD 424	6.58622046E-11	6.27217896E-12	-3.95097288E-07	1.01126871E-10	*APD 425				
2164-*	APD 425	1.11150214E-10	1.50402052E-11	-1.36979088E-06	1.10969303E-10	*APD 426				
2165-*	APD 426	1.51838653E-10	2.55791777E-11	-2.88522733E-06	1.21901392E-10	*APD 427				
2166-*	APD 427	2.15556781E-10	4.79394024E-11	-7.70002407E-06	1.46468906E-10	*APD 428				
2167-*	APD 428	4.28115543E-10	1.53091345E-10	-4.32680099E-05	1.90875898E-10	*APD 429				
2168-*	APD 429	9.78871872E-10	5.04758901E-10	-2.00724913E-04	1.59737279E-10	*APD 430				
2169-*	APC 430	1.04235634E-10	6.45799473E-12	-2.06420964E-07	1.60880670E-10	*APD 431				
2170-*	APC 431	3.52327056E-10	9.23209148E-11	-1.57572213E-05		*APD 432				
2171-DNI	*PDU2		53		1			-9.02599568E-05	*APD 433	
2172-*	APD 433	-4.26604878E-13	8.05245085E-15	-7.95171370E-17	-1.80666000E-04	*APD 434				
2173-*	APD 434	-1.16149017E-12	3.54999131E-14	-6.69141417E-16	-2.38649518E-04	*APD 435				
2174-*	APD 435	-2.06131553E-12	9.07466918E-14	-2.48732008E-15	-2.90161464E-04	*APD 436				
2175-*	APD 436	-3.36203721E-12	2.03469240E-13	-7.55678750E-15	-3.44839180E-04	*APD 437				
2176-*	APD 437	-5.63167048E-12	4.87386932E-13	-2.59410786E-14	-3.76831973E-04	*APD 438				
2177-*	APD 438	-7.61854208E-12	8.25232135E-13	-5.33566077E-14	-4.10821289E-04	*APD 439				
2178-*	APC 439	-1.06166811E-11	1.53090127E-12	-1.45726150E-13	-4.78375936E-04	*APD 440				
2179-*	APD 440	-1.98205619E-11	4.95847374E-12	-1.23632007E-12	-5.52370911E-04	*APD 441				
2180-*	APD 441	-3.40668327E-11	1.19374493E-11	-4.09704649E-12	-7.52235297E-04	*APD 442				
2181-*	APD 442	-2.81122764E-11	4.07907822E-12	-5.09925218E-13	-8.49073054E-04	*APD 443				
2182-*	APD 443	-1.30192440E-10	9.07331016E-11	-7.18866494E-11		*APD 444				
2183-DNI	*PDU2		54		1			3.22532001E-11	*APD 445	
2184-*	APD 445	-9.82823622E-07	-1.55113857E-14	-1.78861181E-18	6.45585946E-11	*APD 446				
2185-*	APD 446	-2.67587257E-06	-6.83832331E-14	-1.50512725E-17	8.52782428E-11	*APD 447				
2186-*	APD 447	-4.74891385E-06	-1.74804778E-13	-5.59483261E-17	1.03685352E-10	*APD 448				
2187-*	APD 448	-7.74555156E-06	-3.91941633E-13	-1.69978059E-16	1.23223778E-10	*APD 449				
2188-*	APD 449	-1.25743958E-05	-9.38849692E-13	-5.83503421E-16	1.34655967E-10	*APD 450				
2189-*	APD 450	-1.75517926E-05	-1.58963901E-12	-1.20017242E-15	1.46801543E-10	*APD 451				
2190-*	APD 451	-2.44589901E-05	-2.94896746E-12	-3.27788029E-15	1.70941344E-10	*APD 452				
2191-*	APD 452	-4.56631678E-05	-9.55147940E-12	-2.78090742E-14	1.97382444E-10	*APD 453				
2192-*	APD 453	-7.84841104E-05	-2.29950364E-11	-9.21565884E-14	2.68801204E-10	*APD 454				
2193-*	APD 454	-6.47658308E-05	-7.85750458E-12	-1.14699611E-14	3.03404857E-10	*APD 455				
2194-*	APC 455	-2.99940817E-04	-1.74778650E-10	-1.61697652E-12		*APD 456				
2195-DNI	*PDU2		55		1			-3.16246473E-11	*APD 457	
2196-*	APD 457	9.73857280E-13	-1.93262757E-08	-2.81836237E-16	-6.33004621E-11	*APD 458				
2197-*	APD 458	2.65146152E-12	-8.52015205E-08	-2.37166959E-15	-8.36163222E-11	*APD 459				
2198-*	APD 459	4.70559095E-12	-2.17796469E-07	-8.81592230E-15	-1.01664718E-10	*APD 460				
2199-*	APD 460	7.67489157E-12	-4.88336184E-07	-2.67838831E-14	-1.20822380E-10	*APD 461				
2200-*	APD 461	1.28560339E-11	-1.16975207E-06	-9.19441389E-14	-1.32031761E-10	*APD 462				

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2201-APC 462	1.73916714E-11	-1.98059752E-06	-1.89114295E-13	-1.43940651E-10	*APD 463					
2202-APD 463	2.42358633E-11	-3.67423945E-06	-5.16504049E-13	-1.67610023E-10	*APD 464					
2203-APD 464	4.52465981E-11	-1.19005808E-05	-4.38194793E-12	-1.93535826E-10	*APD 465					
2204-APC 465	7.77681253E-11	-2.86504510E-05	-1.45213520E-11	-2.63562727E-10	*APD 466					
2205-APD 466	6.41749848E-11	-9.78998833E-06	-1.80735114E-12	-2.97492031E-10	*APD 467					
2206-APD 467	2.97204483E-10	-2.17763896E-04	-2.54791077E-10		*APD 468					
2207-DMI	*PDU2	56	1	2.54315180E-11	*APD 469					
2208-APD 469	2.26767266E-12	2.53942307E-14	-1.85954196E-10	5.09042114E-11	*APD 470					
2209-APD 470	6.22850382E-12	1.11952602E-13	-1.56481583E-09	6.72415595E-11	*APD 471					
2210-APD 471	1.10538254E-11	2.86179012E-13	-5.81670179E-09	8.17555051E-11	*APD 472					
2211-APC 472	1.80289533E-11	6.41661312E-13	-1.76718729E-08	9.71614733E-11	*APD 473					
2212-APD 473	3.01998843E-11	1.53702398E-12	-6.06642629E-08	1.06175707E-10	*APD 474					
2213-APD 474	4.08545003E-11	2.60245384E-12	-1.24776648E-07	1.15752463E-10	*APD 475					
2214-APD 475	5.69320563E-11	4.82785686E-12	-3.40786812E-07	1.34786599E-10	*APD 476					
2215-APD 476	1.06288034E-10	1.56370472E-11	-2.89118725E-06	1.55635296E-10	*APD 477					
2216-APC 477	1.82683785E-10	3.76459697E-11	-9.58111650E-06	2.11948806E-10	*APD 478					
2217-APC 478	1.50752383E-10	1.28637942E-11	-1.19248125E-06	2.39233522E-10	*APD 479					
2218-APD 479	6.98158198E-10	2.86136004E-10	-1.68109982E-04		*APD 480					
2219-DMI	*PDU2	57	1	-2.53214821E-05	*APD 481					
2220-APD 481	-4.34748435E-14	1.59099218E-16	-2.48905264E-19	-5.06831857E-05	*APD 482					
2221-APD 482	-1.18360454E-13	7.01396220E-16	-2.09371242E-18	-6.69473811E-05	*APD 483					
2222-APD 483	-2.10029635E-13	1.79289537E-15	-7.78061883E-18	-8.13927618E-05	*APD 484					
2223-APD 484	-3.42481089E-13	4.01975071E-15	-2.36120096E-17	-9.67169472E-05	*APD 485					
2224-APD 485	-5.73394739E-13	9.62755605E-15	-8.07659812E-17	-1.05673025E-04	*APD 486					
2225-APD 486	-7.75177177E-13	1.62919943E-14	-1.64667030E-16	-1.15170551E-04	*APD 487					
2226-APD 487	-1.67885402E-12	3.01842291E-14	-4.53599908E-16	-1.33942958E-04	*APD 488					
2227-APD 488	-2.00520416E-12	9.79404817E-14	-4.32189413E-15	-1.53862522E-04	*APD 489					
2228-APD 489	-3.36189323E-12	2.24792407E-13	-1.30911890E-14	-3.43215652E-04	*APD 490					
2229-APD 490	-3.00014180E-11	5.54264534E-12	-1.07365939E-12	-2.11034421E-04	*APD 491					
2230-APD 491	-9.37730189E-12	1.09808170E-12	-1.24377071E-13		*APD 492					
2231-DMI	*PDU2	58	1	7.31503660E-12	*APD 493					
2232-APD 493	-8.42375130E-08	-3.18100259E-16	-7.95735342E-20	1.46416906E-11	*APD 494					
2233-APD 494	-2.29337161E-07	-1.40236024E-15	-6.69347727E-19	1.93401961E-11	*APD 495					
2234-APD 495	-4.06556701E-07	-3.58468409E-15	-2.48741730E-18	2.35132747E-11	*APD 496					
2235-APD 496	-6.63556722E-07	-8.03702469E-15	-7.54862114E-18	2.79402196E-11	*APD 497					
2236-APC 497	-1.11101781E-06	-1.92491829E-14	-2.58203965E-17	3.05275111E-11	*APD 498					
2237-APD 498	-1.50199503E-06	-3.25739530E-14	-5.26430712E-17	3.32712191E-11	*APD 499					
2238-APD 499	-2.09040445E-06	-6.03498371E-14	-1.45013232E-16	3.80000000E-11	*APD 500					
2239-APD 500	-3.88531498E-06	-1.95820628E-13	-1.38168417E-15	4.44400000E-11	*APD 501					
2240-APC 501	-6.51405662E-06	-4.49446361E-13	-4.18517285E-15	9.91500000E-11	*APD 502					
2241-APD 502	-5.81312197E-05	-1.10818759E-11	-3.43242795E-13	6.09650108E-11	*APD 503					
2242-APD 503	-1.81695941E-05	-2.19548685E-12	-3.97626268E-14		*APD 504					
2243-DMI	*PDU2	59	1	-9.12259070E-12	*APD 505					
2244-APC 505	8.39858781E-14	-3.97937683E-10	-1.04592356E-18	-1.82596716E-11	*APD 506					
2245-APD 506	2.28652004E-13	-1.75432691E-09	-8.79798564E-18	-2.41191789E-11	*APD 507					
2246-APC 507	4.05740979E-13	-4.48437376E-09	-3.26949159E-17	-2.93234326E-11	*APD 508					
2247-APD 508	6.61614264E-13	-1.00541691E-08	-9.92199704E-17	-3.48442802E-11	*APD 509					
2248-APC 509	1.10769900E-12	-2.40803750E-08	-3.39386408E-16	-3.80709075E-11	*APD 510					
2249-APD 510	1.45750785E-12	-4.07494127E-08	-6.91946720E-16	-4.14925871E-11	*APD 511					
2250-APC 511	2.08416010E-12	-7.54965299E-08	-1.90607125E-15	-4.82557327E-11	*APD 512					

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2251-APD 512	3.87370778E-12	-2.44968021E-07	-1.81610200E-14	-5.54321727E-11	APD 513					
2252-APD 513	6.49459653E-12	-5.62249113E-07	-5.50104497E-14	-1.23650618E-10	APD 514					
2253-APD 514	5.75575554E-11	-1.38632222E-05	-4.51162371E-12	-7.60295299E-11	APD 515					
2254-APC 515	1.81153146E-11	-2.74651302E-06	-5.22644699E-13		APD 516					
2255-DMI *PDU2		60	1		6.32199328E-12	APD 517				
2255-APD 517	2.02628062E-13	4.97827098E-16	-6.69491426E-13	1.26540297E-11	APD 518					
2257-APD 518	5.51655997E-13	2.19469434E-15	-5.63155165E-12	1.67146991E-11	APD 519					
2258-APC 519	5.78507927E-13	5.61003473E-15	-2.09278567E-11	2.03212586E-11	APD 520					
2259-APD 520	1.55623963E-12	1.25779480E-14	-6.35102526E-11	2.41472398E-11	APD 521					
2260-APC 521	2.67248463E-12	3.01249809E-14	-2.17239782E-10	2.63832983E-11	APD 522					
2261-APD 522	3.61295455E-12	5.09782476E-14	-4.42911929E-10	2.87545265E-11	APD 523					
2262-APC 523	5.02833712E-12	9.44475075E-14	-1.22006760E-09	3.34414302E-11	APD 524					
2263-APC 524	9.34587997E-12	3.06459393E-13	-1.16247882E-08	3.84147297E-11	APD 525					
2264-APD 525	1.56691465E-11	7.03383749E-13	-3.52119400E-08	8.56903992E-11	APD 526					
2265-APD 526	1.35830980E-10	1.73431269E-11	-2.88787032E-06	5.26887839E-11	APD 527					
2266-APC 527	4.37058306E-11	3.43593730E-12	-3.34542506E-07		APD 528					
2267-DMI *PDU2		85	45		-1.20195837E-04	APD 529				
2268-APD 529	-2.70369144E-11	1.99262551E-11	-2.08100620E-11	-9.64717910E-05	APD 530					
2269-APD 530	-3.21422056E-12	1.37790875E-13	8.43977557E-13	-9.51672700E-05	APD 531					
2270-APC 531	-4.16605010E-13	5.20681622E-14	-1.31727853E-13	-9.50905669E-05	APD 532					
2271-APD 532	-5.25815116E-14	-5.97173813E-15	2.21068484E-14	-9.50860267E-05	APD 533					
2272-APC 533	-7.61053682E-15	9.48673089E-16	-4.61601785E-15	-9.50857357E-05	APD 534					
2273-APD 534	-3.37688721E-15	2.96414733E-16	-6.63096566E-16	-9.50856629E-05	APD 535					
2274-APC 535	-1.50011653E-15	7.97675676E-17	-1.08773721E-16	-9.50856484E-05	APD 536					
2275-APD 536	-6.06189928E-16	1.44578995E-17	-5.25070926E-18	-9.50856484E-05	APD 537					
2276-APD 537	-5.03587980E-16	9.89387091E-18	-1.93039140E-18	-9.50856484E-05	APD 538					
2277-APC 538	-3.05601017E-16	3.32456627E-18	4.20605987E-19	-9.50856484E-05	APD 539					
2278-APD 539	-1.33128526E-16	2.64219014E-19	1.38646793E-19		APD 540					
2279-DMI *PDU2		86	45		5.91104249E-11	APD 541				
2280-APD 541	-7.17205585E-05	-5.01005765E-11	6.64859747E-12	4.74433132E-11	APD 542					
2291-APD 542	-8.52633548E-06	-3.46447480E-13	-2.69641893E-13	4.68017708E-11	APD 543					
2292-APC 543	-1.10512428E-06	-1.30914919E-13	4.20856756E-14	4.67640510E-11	APD 544					
2293-APD 544	-1.39482495E-07	1.50147364E-14	-7.06290292E-15	4.67618166E-11	APD 545					
2284-APD 545	-2.01884127E-08	-2.38524774E-15	1.47476906E-15	4.67616779E-11	APD 546					
2285-APD 546	-8.95783714E-09	-7.45275068E-16	2.11852416E-16	4.67616362E-11	APD 547					
2286-APC 547	-3.57934488E-09	-2.00559508E-16	3.47520545E-17	4.67616362E-11	APD 548					
2287-APD 548	-1.60803482E-09	-3.63514777E-17	1.67754627E-18	4.67616224E-11	APD 549					
2288-APD 549	-1.33586364E-09	-2.48761401E-17	6.16739868E-19	4.67616224E-11	APD 550					
2289-APC 550	-8.10665535E-10	-8.35895291E-18	-1.34379161E-19	4.67616224E-11	APD 551					
2290-APC 551	-3.53148844E-10	-6.64325604E-19	-4.42961907E-20		APD 552					
2291-DMI *PDU2		87	45		-4.00639938E-11	APD 553				
2292-APD 553	8.77142525E-11	-5.11736434E-05	-6.20154483E-11	-3.21562360E-11	APD 554					
2293-APC 554	1.04277038E-11	-3.53867904E-07	2.51511138E-12	-3.17214033E-11	APD 555					
2294-APD 555	1.35156643E-12	-1.33718913E-07	-3.92558273E-13	-3.16958404E-11	APD 556					
2295-APC 556	1.70587015E-13	1.53363295E-08	6.58799187E-14	-3.16943277E-11	APD 557					
2296-APC 557	2.46904141E-14	-2.43633624E-09	-1.37560556E-14	-3.16942306E-11	APD 558					
2297-APD 558	1.05554293E-14	-7.61237740E-10	-1.97607429E-15	-3.16942028E-11	APD 559					
2298-APD 559	4.86673622E-15	-2.04855188E-10	-3.24153156E-16	-3.16942028E-11	APD 560					
2299-APC 560	1.96662543E-15	-3.71300768E-11	-1.56474779E-17	-3.16942028E-11	APD 561					
2300-APC 561	1.63376054E-15	-2.54089527E-11	-5.75270202E-18	-3.16942028E-11	APD 562					

SORTED BULK DATA ECHO

CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2301-APD	562	9.91443383E-16	-8.53798889E-12	1.25343505E-18	-3.16942028E-11	*APD	563				
2302-APD	563	4.31900829E-16	-6.78554489E-13	4.13177078E-19						*APD	564
2303-DMI		*PDU2	88		45				1.81112625E-11	*APD	565
2304-APD	565	1.96197267E-10	1.00586012E-10	-3.75244854E-05	1.45364935E-11	*APD	566				
2305-APD	566	2.33244396E-11	6.95556405E-13	1.52185112E-06	1.43399277E-11	*APD	567				
2306-APD	567	3.02315291E-12	2.62835489E-13	-2.37530287E-07	1.43283684E-11	*APD	568				
2307-APD	568	3.81565222E-13	-3.01448150E-14	3.98628330E-08	1.43276857E-11	*APD	569				
2308-APD	569	5.52269649E-14	4.78881596E-15	-8.32355340E-09	1.43276415E-11	*APD	570				
2309-APD	570	2.45048631E-14	1.49627544E-15	-1.19568888E-09	1.43276302E-11	*APD	571				
2310-APD	571	1.08858099E-14	4.02659558E-16	-1.96139605E-10	1.43276276E-11	*APD	572				
2311-APD	572	4.39890298E-15	7.29822116E-17	-9.46802272E-12	1.43276276E-11	*APD	573				
2312-APD	573	3.65435763E-15	4.99433919E-17	-3.48086143E-12	1.43276268E-11	*APD	574				
2313-APD	574	2.21763835E-15	1.67821182E-17	7.58432217E-13	1.43276268E-11	*APD	575				
2314-APD	575	9.66066064E-16	1.33375429E-18	2.50006396E-13						*APD	576
2315-DMI		*PDU2	89		45				-1.29952619E-04	*APD	577
2316-APD	577	-4.51490408E-12	1.85611671E-13	1.08764733E-12	-4.20348253E-04	*APD	578				
2317-APD	578	-3.95453809E-11	2.40320958E-11	-2.26132862E-11	-3.93760623E-04	*APD	579				
2318-APD	579	-4.75310589E-12	9.32980906E-14	9.75600677E-13	-3.02298680E-04	*APD	580				
2319-APC	580	-6.01806907E-13	7.08841623E-14	-1.58283814E-13	-3.92215559E-04	*APD	581				
2320-APD	581	-8.64382893E-14	-8.08771453E-15	2.88959564E-14	-3.92210204E-04	*APD	582				
2321-APD	582	-3.82707138E-14	-2.58453850E-15	4.19975537E-15	-3.92208807E-04	*APD	583				
2322-APD	583	-1.69852773E-14	-7.02448447E-16	6.84589604E-16	-3.92208574E-04	*APD	584				
2323-APD	584	-6.86192233E-15	-1.27538849E-16	3.37237168E-17	-3.92208574E-04	*APD	585				
2324-APD	585	-5.70008111E-15	-8.75003166E-17	1.27288033E-17	-3.92208574E-04	*APD	586				
2325-APD	586	-3.45871547E-15	-2.95895872E-17	-2.44005377E-18	-3.92208574E-04	*APD	587				
2326-APC	587	-1.50674244E-15	-2.33809383E-18	-8.39379200E-19						*APD	588
2327-DMI		*PDU2	90		45				6.62022243E-11	*APD	589
2328-APD	589	-1.14854274E-05	-4.84610561E-13	-2.60202233E-13	2.14139553E-10	*APD	590				
2329-APD	590	-1.00599165E-04	-6.27450314E-11	5.40986613E-12	2.00594930E-10	*APD	591				
2330-APD	591	-1.20913865E-05	-2.43590521E-13	-2.33396798E-13	1.99850206E-10	*APD	592				
2331-APD	592	-1.53093151E-06	-1.85070438E-13	3.78668586E-14	1.99807809E-10	*APD	593				
2332-APC	593	-2.15889614E-07	2.11160909E-14	-6.91288999E-15	1.99805117E-10	*APD	594				
2333-APD	594	-9.73565193E-08	6.74792863E-15	-1.00472422E-15	1.99804437E-10	*APD	595				
2334-APD	595	-4.32087077E-08	1.83401162E-15	-1.63777050E-16	1.99804284E-10	*APD	596				
2335-APD	596	-1.74559887E-08	3.32989192E-16	-8.06785813E-18	1.99804256E-10	*APD	597				
2336-APD	597	-1.45003902E-08	2.28453044E-16	-3.04516120E-18	1.99804243E-10	*APD	598				
2337-APD	598	-8.79859741E-09	7.72550031E-17	5.83743581E-19	1.99804229E-10	*APD	599				
2338-APD	599	-3.83298726E-09	6.10449283E-18	2.00807916E-19						*APD	600
2339-DMI		*PDU2	91		45				-4.10607381E-11	*APD	601
2340-APD	601	1.41835094E-11	-4.76678849E-07	3.33260503E-12	-1.32816189E-10	*APD	602				
2341-APD	602	1.24231264E-10	-6.17180776E-05	-6.92882141E-11	-1.24415381E-10	*APD	603				
2342-APC	603	1.49318058E-11	-2.39603594E-07	2.98928764E-12	-1.23953472E-10	*APD	604				
2343-APD	604	1.89056756E-12	-1.82041333E-07	-4.84989273E-13	-1.23927174E-10	*APD	605				
2344-APC	605	2.71544668E-13	2.07704787E-08	8.85385515E-14	-1.23925509E-10	*APD	606				
2345-APD	606	1.20226902E-13	6.63748523E-09	1.28682567E-14	-1.23925092E-10	*APD	607				
2346-APD	607	5.33590167E-14	1.80399407E-09	2.09761547E-15	-1.23924995E-10	*APD	608				
2347-APD	608	2.15566361E-14	3.27538885E-10	1.03331111E-16	-1.23924981E-10	*APD	609				
2348-APD	609	1.79067271E-14	2.24711405E-10	3.90016585E-17	-1.23924968E-10	*APD	610				
2349-APD	610	1.08655049E-14	7.59905611E-11	-7.47644219E-18	-1.23924954E-10	*APD	611				
2350-APC	611	4.72340984E-15	6.00457965E-12	-2.57189808E-18						*APD	612

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
2351-	DMI	*PDU2		92		45			2.27331626E-11	*APD	613
2352-	*APD	613	3.12256054E-11	9.38450706E-13	2.05001379E-06	7.35333044E-11	*APD	614			
2353-	*APD	614	2.73500333E-10	1.21506152E-10	-4.26218612E-05	6.88822194E-11	*APD	615			
2354-	*APD	615	3.28730376E-11	4.71714519E-13	1.83882639E-06	6.86264934E-11	*APD	616			
2355-	*APD	616	4.16216714E-12	3.58390021E-13	-2.98335578E-07	6.86119356E-11	*APD	617			
2356-	*APD	617	5.97817369E-13	-4.08914405E-14	5.44635128E-08	6.86110058E-11	*APD	618			
2357-	*APD	618	2.64684704E-13	-1.30674077E-14	7.91576227E-09	6.86107837E-11	*APD	619			
2358-	*APD	619	1.17472167E-13	-3.55157484E-15	1.29032429E-09	6.86107282E-11	*APD	620			
2359-	*APD	620	4.74578669E-14	-6.44835595E-16	6.35629605E-11	6.86107143E-11	*APD	621			
2360-	*APD	621	3.94224380E-14	-4.42400861E-16	2.39914200E-11	6.86107143E-11	*APD	622			
2361-	*APD	622	2.39208813E-14	-1.49604799E-16	-4.59904771E-12	6.86107005E-11	*APD	623			
2362-	*APD	623	1.04208058E-14	-1.18213879E-17	-1.58207388E-12		*APD	624			
2363-	DMI	*PDU2		93		45			-1.29432694E-04	*APD	625
2364-	*APD	625	-5.90129128E-13	7.53504247E-14	-1.83465710E-13	-3.97561118E-04	*APD	626			
2365-	*APD	626	-4.79321791E-12	1.00230913E-13	1.05436666E-12	-6.90924935E-04	*APD	627			
2366-	*APD	627	-3.97599453E-11	2.56541177E-11	-2.42453835E-11	-6.64273044E-04	*APD	628			
2367-	*APD	628	-4.55892541E-12	6.18417400E-15	1.12364458E-12	-6.62860693E-04	*APD	629			
2368-	*APC	629	-6.62029025E-13	8.01759917E-14	-1.94055817E-13	-6.62773848E-04	*APD	630			
2369-	*APC	630	-2.93200360E-13	2.35673907E-14	-2.93287970E-14	-6.62752427E-04	*APD	631			
2370-	*APD	631	-1.30179071E-13	6.16344202E-15	-4.66723285E-15	-6.62747771E-04	*APD	632			
2371-	*APD	632	-5.25562364E-14	1.11145630E-15	-2.51397261E-16	-6.62747305E-04	*APD	633			
2372-	*APD	633	-4.36919178E-14	7.54853528E-16	-1.02771447E-16	-6.62746374E-04	*APD	634			
2373-	*APD	634	-2.65124192E-14	2.48811270E-16	1.21455144E-17	-6.62745908E-04	*APD	635			
2374-	*APD	635	-1.15494535E-14	2.01232661E-17	4.83892635E-18		*APD	636			
2375-	DMI	*PDU2		94		45			6.51873278E-11	*APD	637
2376-	*APD	637	-1.50302913E-06	-1.80226439E-13	4.90579189E-14	2.00227238E-10	*APD	638			
2377-	*APD	638	-1.22080892E-05	-2.39736616E-13	-2.81933060E-13	3.47976536E-10	*APD	639			
2378-	*APD	639	-1.01266618E-04	-6.13606388E-11	6.48311006E-12	3.34553496E-10	*APD	640			
2379-	*APD	640	-1.17132349E-05	-1.47915805E-14	-3.00457684E-13	3.33842287E-10	*APD	641			
2380-	*APD	641	-1.68615497E-06	-1.91768368E-13	5.18896619E-14	3.33798544E-10	*APD	642			
2381-	*APC	642	-7.46766773E-07	-5.63695039E-14	7.84238668E-15	3.33787886E-10	*APD	643			
2382-	*APD	643	-3.31559647E-07	-1.47419918E-14	1.24799780E-15	3.33785444E-10	*APD	644			
2383-	*APD	644	-1.33559986E-07	-2.65842900E-15	6.72225464E-17	3.33785222E-10	*APD	645			
2384-	*APD	645	-1.11281111E-07	-1.80549117E-15	2.74806208E-17	3.33784778E-10	*APD	646			
2385-	*APD	646	-6.75257752E-08	-5.95117725E-16	-3.24765584E-18	3.33784556E-10	*APD	647			
2386-	*APC	647	-2.94158866E-08	-4.81317076E-17	-1.29390652E-18		*APD	648			
2387-	DMI	*PDU2		95		45			-4.31900765E-11	*APD	649
2389-	*APD	649	1.88006468E-12	-1.81865005E-07	-5.37301540E-13	-1.32661215E-10	*APD	650			
2389-	*APD	650	1.52704932E-11	-2.41916212E-07	3.08784161E-12	-2.30553049E-10	*APD	651			
2390-	*APC	651	1.26669397E-10	-6.19185012E-05	-7.10055625E-11	-2.21659649E-10	*APD	652			
2391-	*APD	652	1.46515022E-11	-1.49260586E-08	3.29073054E-12	-2.21188373E-10	*APD	653			
2392-	*APD	653	2.16912798E-12	-1.93511880E-07	-5.68315902E-13	-2.21159438E-10	*APD	654			
2393-	*APC	654	9.34093081E-13	-5.68819942E-08	-8.58928813E-14	-2.21152291E-10	*APD	655			
2394-	*APC	655	4.14731563E-13	-1.48760222E-08	-1.36685605E-14	-2.21150709E-10	*APD	656			
2395-	*APC	656	1.67563934E-13	-2.68259859E-09	-7.36247814E-16	-2.21150515E-10	*APD	657			
2396-	*APD	657	1.35156055E-13	-1.82190618E-09	-3.00978546E-16	-2.21150251E-10	*APD	658			
2397-	*APD	658	8.44646618E-14	-6.00528294E-10	3.55696001E-17	-2.21150098E-10	*APD	659			
2398-	*APC	659	3.67948774E-14	-4.85693152E-11	1.41713774E-17		*APD	660			
2399-	DMI	*PDU2		96		45			2.14549767E-11	*APD	661
2400-	*APD	661	4.10399579E-12	3.57648047E-13	-3.23054167E-07	6.59003963E-11	*APD	662			

SORTED BULK DATA ECHO

CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2401-*	APD 662	3.33339606E-11	4.75742167E-13	1.85657427E-06	1.14528859E-10	*APD 663					
2402-*	APD 663	2.76506595E-10	1.21766305E-10	-4.26923070E-05	1.10110990E-10	*APD 664					
2403-*	APD 664	3.15827775E-11	2.93529578E-14	1.97856116E-06	1.09876885E-10	*APD 665					
2404-*	APC 665	4.60401595E-12	3.80552252E-13	-3.41701650E-07	1.09862508E-10	*APD 666					
2405-*	APD 666	2.03903300E-12	1.11861692E-13	-5.16433829E-08	1.09858969E-10	*APD 667					
2406-*	APD 667	9.05317813E-13	2.92545529E-14	-8.21826518E-09	1.09858178E-10	*APD 668					
2407-*	APD 668	3.65775390E-13	5.27548383E-15	-4.42671233E-10	1.09858081E-10	*APD 669					
2408-*	APD 669	3.03851182E-13	3.58288160E-15	-1.80964285E-10	1.09857942E-10	*APD 670					
2409-*	APD 670	1.84378012E-13	1.18097357E-15	2.13863233E-11	1.09857873E-10	*APD 671					
2410-*	APD 671	8.03195401E-14	9.55143468E-17	8.52058528E-12		*APD 672					
2411-DMI	*PDU2		97	45		-1.29411608E-04	*APD 673				
2412-*	APC 673	-7.91641600E-14	-7.60700978E-15	3.07563728E-14	-3.96340154E-04	*APD 674					
2413-*	APD 674	-6.45030145E-13	6.70313414E-14	-1.70878448E-13	-6.64700521E-04	*APD 675					
2414-*	APD 675	-4.88798065E-12	5.44353855E-15	1.12243201E-12	-9.63376136E-04	*APD 676					
2415-*	APC 676	-4.23266283E-11	2.25914842E-11	-2.42432741E-11	-9.37140314E-04	*APD 677					
2416-*	APD 677	-5.61423217E-12	1.77149040E-13	1.20256843E-12	-9.35625518E-04	*APD 678					
2417-*	APD 678	-2.42484765E-12	7.39873793E-15	1.93903216E-13	-9.35265096E-04	*APD 679					
2418-*	APD 679	-1.06547583E-12	-3.79927481E-15	3.02984769E-14	-9.35187330E-04	*APD 680					
2419-*	APD 680	-4.29234447E-13	-8.72367703E-16	1.60848740E-15	-9.35177784E-04	*APD 681					
2420-*	APD 681	-1.56270840E-13	-7.83014621E-16	7.21795103E-16	-9.35164746E-04	*APD 682					
2421-*	APD 682	-2.15922983E-13	-4.19831457E-16	-2.09554231E-17	-9.35157994E-04	*APD 683					
2422-*	APD 683	-9.40774151E-14	-2.20625613E-17	-2.72408046E-17		*APD 684					
2423-DMI	*PDU2		98	45		6.52543852E-11	*APD 685				
2424-*	APD 685	-1.89825926E-07	2.11608210E-14	-7.84923071E-15	1.99850206E-10	*APD 686					
2425-*	APD 686	-1.54670215E-06	-1.86464613E-13	4.36093287E-14	3.35167893E-10	*APD 687					
2426-*	APD 687	-1.17207746E-05	-1.51425808E-14	-2.86452286E-13	4.85771867E-10	*APD 688					
2427-*	APD 688	-1.01494035E-04	-6.28439245E-11	6.18704567E-12	4.72542672E-10	*APD 689					
2428-*	APC 689	-1.34622351E-05	-4.92784687E-13	-3.06903591E-13	4.71778838E-10	*APD 690					
2429-*	APD 690	-5.81448512E-06	-2.05814573E-14	-4.94854063E-14	4.71597206E-10	*APD 691					
2430-*	APC 691	-2.55487976E-06	1.05686401E-14	-7.73237404E-15	4.71557904E-10	*APD 692					
2431-*	APD 692	-1.02925060E-06	2.42671064E-15	-4.10496730E-16	4.71553241E-10	*APD 693					
2432-*	APD 693	-6.54293489E-07	2.17815285E-15	-1.84206968E-16	4.71546580E-10	*APD 694					
2433-*	APC 694	-5.17756746E-07	1.16786743E-15	5.34796585E-18	4.71543027E-10	*APD 695					
2434-*	APD 695	-2.25586064E-07	6.13725663E-17	6.95203615E-18		*APD 696					
2435-DMI	*PDU2		99	45		-4.20441598E-11	*APD 697				
2436-*	APD 697	2.37333102E-13	2.08716706E-08	8.92165573E-14	-1.28765831E-10	*APD 698					
2437-*	APD 698	1.93379080E-12	-1.83918654E-07	-4.95675983E-13	-2.15952714E-10	*APD 699					
2438-*	APD 699	1.46540974E-11	-1.49356651E-08	3.25589729E-12	-3.12908524E-10	*APD 700					
2439-*	APD 700	1.26894648E-10	-6.19852071E-05	-7.03237052E-11	-3.04464676E-10	*APD 701					
2440-*	APC 701	1.68313835E-11	-4.86051078E-07	3.48835284E-12	-3.03972625E-10	*APD 702					
2441-*	APD 702	7.26965883E-12	-2.03002237E-08	5.62465168E-13	-3.03855607E-10	*APD 703					
2442-*	APD 703	3.19428164E-12	1.04242268E-08	8.78883554E-14	-3.03830294E-10	*APD 704					
2443-*	APD 704	1.26683869E-12	2.39355114E-09	4.66582000E-15	-3.03827186E-10	*APD 705					
2444-*	APD 705	1.06809440E-12	2.14838969E-09	2.09374856E-15	-3.03822967E-10	*APD 706					
2445-*	APD 706	6.47334183E-13	1.15190923E-09	-6.07864857E-17	-3.03820746E-10	*APD 707					
2446-*	APD 707	2.82042835E-13	6.05339529E-11	-7.90188169E-17		*APD 708					
2447-DMI	*PDU2		100	45		2.24076729E-11	*APD 709				
2448-*	APD 709	5.16567800E-13	-4.08298917E-14	5.42505241E-08	6.86264934E-11	*APD 710					
2449-*	APD 710	4.20899687E-12	3.59784197E-13	-3.01408988E-07	1.15093254E-10	*APD 711					
2450-*	APD 711	3.18954030E-11	2.92176731E-14	1.97983536E-06	1.66809094E-10	*APD 712					



EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
2451-APC	712	2.76192624E-10	1.21257615E-10	-4.27621999E-05	1.62266311E-10	APD	713			
2452-APD	713	3.66343900E-11	9.50829693E-13	2.12118539E-06	1.62004049E-10	APD	714			
2453-APD	714	1.56227875E-11	3.97120047E-14	3.42021906E-07	1.61941655E-10	APD	715			
2454-APC	715	6.95252016E-12	-2.03922335E-14	5.34428537E-08	1.61928151E-10	APD	716			
2455-APD	716	2.80087151E-12	-4.68234731E-15	2.83717760E-09	1.61926528E-10	APD	717			
2456-APC	717	2.32476365E-12	-4.20275387E-15	1.27315958E-09	1.61924280E-10	APD	718			
2457-APD	718	1.40895628E-12	-2.25340495E-15	-3.69628356E-11	1.61923086E-10	APD	719			
2458-APD	719	6.13880908E-13	-1.18418634E-16	-4.80494949E-11		APD	720			
2459-DMI	*PDU2		101	45		-9.02180036E-05	APD	721		
2460-APD	721	-7.92679521E-15	1.06535463E-15	-4.43844587E-15	-2.76258914E-04	APD	722			
2461-APD	722	-6.40936956E-14	-6.74246696E-15	2.15597295E-14	-4.62426106E-04	APD	723			
2462-APC	723	-4.86784549E-13	6.22168875E-14	-1.33971718E-13	-6.53349096E-04	APD	724			
2463-APD	724	-3.86397994E-12	1.56171950E-13	8.31123094E-13	-8.63470370E-04	APD	725			
2464-APD	725	-3.26513955E-11	2.36237974E-11	-2.07137640E-11	-8.43804562E-04	APD	726			
2465-APD	726	-1.34985747E-11	6.10399231E-12	-3.47943896E-12	-8.39418266E-04	APD	727			
2466-APD	727	-5.83515267E-12	1.48228131E-12	-5.08603739E-13	-8.38512089E-04	APD	728			
2467-APD	728	-2.33945502E-12	2.63556429E-13	-3.85114371E-14	-8.38404056E-04	APD	729			
2468-APD	729	-1.93908778E-12	1.75193356E-13	-1.81718857E-14	-8.38258304E-04	APD	730			
2469-APD	730	-1.17276241E-12	5.45177408E-14	1.33943557E-16	-8.38185661E-04	APD	731			
2470-APD	731	-5.11002590E-13	4.64361080E-15	1.62884608E-16		APD	732			
2471-DMI	*PDU2		102	45		4.62801325E-11	APD	733		
2472-APD	733	-1.91548430E-08	-2.33723770E-15	1.44845937E-15	1.41715750E-10	APD	734			
2473-APD	734	-1.54880411E-07	1.47920176E-14	-7.03587918E-15	2.37215803E-10	APD	735			
2474-APD	735	-1.17629861E-06	-1.36495036E-13	4.37208219E-14	3.35155681E-10	APD	736			
2475-APD	736	-9.38550566E-06	-3.42619271E-13	-2.71231713E-13	4.42944126E-10	APD	737			
2476-APD	737	-7.89010373E-05	-5.18272647E-11	6.75980539E-12	4.32855751E-10	APD	738			
2477-APD	738	-3.26188601E-05	-1.33912976E-11	1.13549274E-12	4.30605773E-10	APD	739			
2478-APD	739	-1.41004566E-05	-3.25191610E-12	1.65979589E-13	4.30140812E-10	APD	740			
2479-APD	740	-5.65321807E-06	-5.78205561E-13	1.25679632E-14	4.30085523E-10	APD	741			
2480-APD	741	-4.68574217E-06	-3.84349453E-13	5.93027756E-15	4.30010694E-10	APD	742			
2481-APD	742	-2.83394274E-06	-1.19604196E-13	-4.37116249E-17	4.29973612E-10	APD	743			
2482-APD	743	-1.23482056E-06	-1.01874245E-14	-5.31563599E-17		APD	744			
2483-DMI	*PDU2		103	45		-3.01230846E-11	APD	745		
2484-APD	745	2.36636543E-14	-2.31160535E-09	-1.27315998E-14	-9.22407845E-11	APD	746			
2485-APD	746	1.91337343E-13	1.46297943E-08	6.18436509E-14	-1.54400548E-10	APD	747			
2486-APC	747	1.49318479E-12	-1.34998118E-07	-3.84295189E-13	-2.18148236E-10	APD	748			
2487-APD	748	1.15547417E-11	-3.38861810E-07	2.38405996E-12	-2.88306046E-10	APD	749			
2488-APD	749	9.74733627E-11	-5.12588886E-05	-5.94170130E-11	-2.81739743E-10	APD	750			
2489-APD	750	4.02969325E-11	-1.32444366E-05	-9.98070203E-12	-2.80275136E-10	APD	751			
2490-APC	751	1.74195242E-11	-3.21625248E-06	-1.45891892E-12	-2.79972712E-10	APD	752			
2491-APD	752	6.98391431E-12	-5.71864462E-07	-1.10469251E-13	-2.79936518E-10	APD	753			
2492-APD	753	5.78870719E-12	-3.80134338E-07	-5.21256859E-14	-2.79887891E-10	APD	754			
2493-APD	754	3.50101805E-12	-1.18292519E-07	3.84214357E-16	-2.79863688E-10	APD	755			
2494-APC	755	1.52548200E-12	-1.00757021E-08	4.67231209E-16		APD	756			
2495-DMI	*PDU2		104	45		1.67492686E-11	APD	757		
2496-APD	757	5.17541942E-14	4.58813692E-15	-7.89741961E-09	5.12884318E-11	APD	758			
2497-APD	758	4.18469133E-13	-2.90376176E-14	3.83616623E-08	8.58509930E-11	APD	759			
2498-APC	759	3.17822418E-12	2.67947936E-13	-2.38378561E-07	1.21296473E-10	APD	760			
2499-APC	760	2.53585625E-11	6.72582107E-13	1.47883384E-06	1.60306241E-10	APD	761			
2500-APD	761	2.13181570E-10	1.01740033E-10	-3.68564215E-05	1.56655175E-10	APD	762			

## SORTED BULK DATA ECHO

## CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2501-APC	762	8.81324180E-11	2.62879163E-11	-6.19103685E-06	1.55840868E-10	APD	763			
2502-APD	763	3.80978027E-11	6.38370693E-12	-9.04968942E-07	1.55672614E-10	APD	764			
2503-APD	764	1.52743374E-11	1.13505212E-12	-6.85241730E-08	1.55652588E-10	APD	765			
2504-APD	765	1.26603372E-11	7.54500954E-13	-3.23336025E-08	1.55625526E-10	APD	766			
2505-APD	766	7.65698963E-12	2.34790215E-13	2.38328468E-10	1.55612037E-10	APD	767			
2506-APD	767	3.33634422E-12	1.99985258E-14	2.89823721E-10		APD	768			
2507-DMI	*PDU2		105	45				-5.31557889E-05	APD	769
2508-APD	769	-2.01917133E-15	1.65704897E-16	-4.10983774E-16	-1.62768163E-04	APD	770			
2509-APD	770	-1.62910965E-14	-1.07259020E-15	2.01982905E-15	-2.72423262E-04	APD	771			
2510-APD	771	-1.23765202E-13	9.10402193E-15	-1.30516325E-14	-3.84327490E-04	APD	772			
2511-APD	772	-9.63042146E-13	3.24698264E-15	8.63822360E-14	-4.97164903E-04	APD	773			
2512-APD	773	-7.74929513E-12	3.03858848E-12	-2.24281444E-12	-5.58486907E-04	APD	774			
2513-APD	774	-2.12932445E-11	1.43259111E-11	-1.72526160E-11	-5.42356400E-04	APD	775			
2514-APD	775	-8.19517197E-12	3.29903813E-12	-2.49696618E-12	-5.39239962E-04	APD	776			
2515-APC	776	-3.16799972E-12	5.80300944E-13	-1.96190232E-13	-5.38875582E-04	APD	777			
2516-APD	777	-2.59769550E-12	3.79243132E-13	-9.34936807E-14	-5.38401306E-04	APD	778			
2517-APD	778	-1.54581556E-12	1.12379995E-13	5.79808346E-17	-5.38190827E-04	APD	779			
2518-APD	779	-6.74673479E-13	1.00169269E-14	5.79529990E-16		APD	780			
2519-DMI	*PDU2		106	45				2.71893202E-11	APD	781
2520-APD	781	-5.00769914E-09	-4.22854729E-16	1.35092094E-16	8.32563324E-11	APD	782			
2521-APD	782	-4.04031866E-08	2.73709443E-15	-6.63926235E-16	1.39345230E-10	APD	783			
2522-APD	783	-3.06947300E-07	-2.32321452E-14	4.29012362E-15	1.96584499E-10	APD	784			
2523-APD	784	-2.38841945E-06	-8.28582537E-15	-2.83942147E-14	2.54301025E-10	APD	785			
2524-APD	785	-1.92188454E-05	-7.75403700E-12	7.37222620E-13	2.85667490E-10	APD	786			
2525-APD	786	-5.28089149E-05	-3.65576319E-11	5.67100880E-12	2.77416534E-10	APD	787			
2526-APD	787	-2.03246600E-05	-8.41866681E-12	8.20763162E-13	2.75822476E-10	APD	788			
2527-APD	788	-7.85688644E-06	-1.48084323E-12	6.44885078E-14	2.75636181E-10	APD	789			
2528-APD	789	-6.44248667E-06	-9.67772737E-13	3.07317750E-14	2.75393708E-10	APD	790			
2529-APC	790	-3.83374299E-06	-2.86777384E-13	-1.90585325E-17	2.75286016E-10	APD	791			
2530-APD	791	-1.67324197E-06	-2.55617467E-14	-1.90493938E-16		APD	792			
2531-DMI	*PDU2		107	45				-1.55216950E-11	APD	793
2532-APD	793	6.33516270E-15	-4.25554703E-10	-1.10835828E-15	-4.75289391E-11	APD	794			
2533-APD	794	5.11134273E-14	2.75457146E-09	5.44715708E-15	-7.95486871E-11	APD	795			
2534-APD	795	3.88314110E-13	-2.33804904E-08	-3.51981932E-14	-1.12225146E-10	APD	796			
2535-APD	796	3.02155176E-12	-8.33873415E-09	2.32959322E-13	-1.45174150E-10	APD	797			
2536-APD	797	2.43134540E-11	-7.80354821E-06	-6.04851759E-12	-1.63080410E-10	APD	798			
2537-APC	798	6.68077121E-11	-3.67910689E-05	-4.65275873E-11	-1.58370220E-10	APD	799			
2538-APD	799	2.57124044E-11	-8.47242245E-06	-6.73392245E-12	-1.57460225E-10	APD	800			
2539-APD	800	5.93962204E-12	-1.49029893E-06	-5.29094130E-13	-1.57353838E-10	APD	801			
2540-APD	801	8.15028687E-12	-9.73952410E-07	-2.52137775E-13	-1.57215338E-10	APD	802			
2541-APC	802	4.85000755E-12	-2.88608533E-07	1.56365141E-16	-1.57153901E-10	APD	803			
2542-APD	803	2.11679198E-12	-2.57249653E-08	1.56290073E-15		APD	804			
2543-DMI	*PDU2		108	45				1.01219510E-11	APD	805
2544-APD	805	1.33671184E-14	8.53151702E-16	-6.68425981E-10	3.09943876E-11	APD	806			
2545-APD	806	1.07848734E-13	-5.52236005E-15	3.28505934E-09	5.18749765E-11	APD	807			
2546-APC	807	8.19338358E-13	4.68731736E-14	-2.12272369E-08	7.31838201E-11	APD	808			
2547-APD	808	6.37543924E-12	1.67174827E-14	1.40492546E-07	9.46703965E-11	APD	809			
2548-APD	809	5.13011300E-11	1.56445412E-11	-3.64772404E-06	1.06347361E-10	APD	810			
2549-APC	810	1.40963519E-10	7.37586936E-11	-2.80597451E-05	1.03275777E-10	APD	811			
2550-APD	811	5.42528800E-11	1.69854963E-11	-4.06107665E-06	1.02682349E-10	APD	812			

SORTED BULK DATA ECHO

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
2551-APD	812	2.09724876E-11	2.98774980E-12	-3.19084734E-07	1.02612974E-10	APD	813			
2552-APD	813	1.71970077E-11	1.95257872E-12	-1.52058590E-07	1.02522657E-10	APD	814			
2553-APD	814	1.02334668E-11	5.78602053E-13	9.43002898E-11	1.02482592E-10	APD	815			
2554-APD	815	4.46640728E-12	5.15733764E-14	9.42550260E-10		APD	816			
2555-DMI	*PDU2		109	45		-6.66781270E-05	APD	817		
2556-APD	817	-1.09148962E-15	6.28838584E-17	-8.20950156E-17	-2.04174343E-04	APD	818			
2557-APD	818	-2.75821254E-15	-4.11095371E-16	4.00927375E-16	-3.41714360E-04	APD	819			
2558-APD	819	-6.66671932E-14	3.35755157E-15	-2.52915462E-15	-4.81911469E-04	APD	820			
2559-APD	820	-5.14923390E-13	-2.35125801E-15	1.64363491E-14	-6.20397739E-04	APD	821			
2560-APC	821	-4.07628532E-12	1.04055653E-12	-3.99216684E-13	-6.80327415E-04	APD	822			
2561-APD	822	-9.57231724E-12	4.65226729E-12	-3.04058775E-12	-7.56511232E-04	APD	823			
2562-APD	823	-2.56196314E-11	1.91398564E-11	-1.93188937E-11	-7.37534836E-04	APD	824			
2563-APD	824	-9.11635611E-12	3.30939703E-12	-1.47427556E-12	-7.35365553E-04	APD	825			
2564-APC	825	-7.27579656E-12	2.10589619E-12	-6.80555005E-13	-7.32677290E-04	APD	826			
2565-APC	826	-4.18432532E-12	5.73589787E-13	1.85515123E-14	-7.31690321E-04	APD	827			
2566-APD	827	-1.82055065E-12	5.39898462E-14	7.01369369E-15		APD	828			
2567-DMI	*PDU2		110	45		3.44375778E-11	APD	829		
2568-APD	829	-2.79048740E-09	-1.32191191E-16	1.79450283E-17	1.05450940E-10	APD	830			
2569-APD	830	-2.24933885E-08	8.64183247E-16	-8.76381315E-17	1.76487019E-10	APD	831			
2570-APC	831	-1.70951807E-07	-7.05806805E-15	5.52844217E-16	2.48895127E-10	APD	832			
2571-APD	832	-1.31644538E-06	4.94269136E-15	-3.59279528E-15	3.20419913E-10	APD	833			
2572-APD	833	-1.04213750E-05	-2.18740477E-12	8.72641803E-14	3.51372043E-10	APD	834			
2573-APD	834	-2.54550864E-05	-9.77975600E-12	6.64637887E-13	3.90719013E-10	APD	835			
2574-APD	835	-6.54988253E-05	-4.02348155E-11	4.22288940E-12	3.80918186E-10	APD	836			
2575-APD	836	-2.33067403E-05	-6.95684309E-12	3.22259905E-13	3.79797971E-10	APD	837			
2576-APD	837	-1.86114194E-05	-4.42690676E-12	1.48761537E-13	3.78409526E-10	APD	838			
2577-APD	838	-1.06208918E-05	-1.20577073E-12	-4.05514652E-15	3.77899712E-10	APD	839			
2578-APD	839	-4.65439552E-06	-1.13494609E-13	-1.53311375E-15		APD	840			
2579-DMI	*PDU2		111	45		-2.18066121E-11	APD	841		
2580-APD	841	3.46069604E-15	-1.43653200E-10	-2.30659142E-16	-6.67737948E-11	APD	842			
2581-APD	842	2.78957630E-14	9.39114786E-10	1.12646975E-15	-1.11755369E-10	APD	843			
2582-APC	843	2.12010368E-13	-7.67006014E-09	-7.10606433E-15	-1.57605831E-10	APD	844			
2583-APC	844	1.63262459E-12	5.37126255E-09	4.61805649E-14	-2.02896824E-10	APD	845			
2584-APD	845	1.29243413E-11	-2.37707081E-06	-1.12166266E-12	-2.22496355E-10	APD	846			
2585-APD	846	3.16183885E-11	-1.06277375E-05	-8.54302133E-12	-2.47411647E-10	APD	847			
2586-APD	847	8.12300782E-11	-4.37234994E-05	-5.42795392E-11	-2.41205500E-10	APD	848			
2587-APD	848	2.89044760E-11	-7.56005647E-06	-4.14221522E-12	-2.40496068E-10	APD	849			
2588-APD	849	2.30814395E-11	-4.81075404E-06	-1.91212844E-12	-2.39616993E-10	APD	850			
2589-APC	850	1.31717770E-11	-1.31031993E-06	5.21234531E-14	-2.39294140E-10	APD	851			
2590-APD	851	5.77226981E-12	-1.23335496E-07	1.97061029E-14		APD	852			
2591-DMI	*PDU2		112	45		1.15637066E-11	APD	853		
2592-APD	853	7.62576986E-15	2.90816692E-16	-1.37541450E-10	3.54090923E-11	APD	854			
2593-APD	854	6.14693301E-14	-1.90117858E-15	6.71710909E-10	5.92621091E-11	APD	855			
2594-APC	855	4.67172633E-13	1.55275505E-14	-4.23732871E-09	8.35758823E-11	APD	856			
2595-APC	856	3.55754847E-12	-1.08737821E-14	2.75373502E-08	1.07592990E-10	APD	857			
2596-APD	857	2.84792606E-11	4.81222874E-12	-6.68845018E-07	1.17986301E-10	APD	858			
2597-APC	858	6.56722957E-11	2.15151785E-11	-5.09418169E-06	1.31198552E-10	APD	859			
2598-APD	859	1.78993473E-10	8.85154589E-11	-3.23667482E-05	1.27907573E-10	APD	860			
2599-APC	860	6.36920655E-11	1.53048546E-11	-2.46999207E-06	1.27531374E-10	APD	861			
2600-APD	861	5.08608156E-11	9.73906806E-12	-1.14019713E-06	1.27065164E-10	APD	862			

## S O R T E D B U L K D A T A E C H O

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CARD
COUNT.  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  .. 10  .
2601-*APD 862  2.90244911E-11  2.65266021E-12  3.10810790E-08  1.26893981E-10*APD 863
2602-*APD 863  1.27194089E-11  2.49684930E-13  1.17507000E-08                                *APD 864
2603-DMI      *PDU2                113                45                -4.87175712E-05 *APD 865
2604-*APD 865  -3.3666586E-16  8.66679645E-18  -2.34809527E-18  -1.49177431E-04*APD 866
2605-*APD 866  -2.71309163E-15  -5.67559191E-17  1.17024236E-17  -2.49667792E-04*APD 867
2606-*APD 867  -2.06216575E-14  4.60396500E-16  -8.07200429E-17  -3.52073461E-04*APD 868
2607-*APD 868  -1.58339867E-13  -4.10524894E-16  5.17019594E-16  -4.52796929E-04*APD 869
2608-*APD 869  -1.24745179E-12  1.40685478E-13  -1.79111622E-14  -4.94216802E-04*APD 870
2609-*APD 870  -2.94252383E-12  6.22258863E-13  -1.41555658E-13  -5.38871158E-04*APD 871
2610-*APD 871  -6.95853965E-12  2.51645666E-12  -8.73541907E-13  -6.19162107E-04*APD 872
2611-*APD 872  -2.55593324E-11  1.89197547E-11  -1.48222823E-11  -6.06533838E-04*APD 873
2612-*APD 873  -1.87310861E-11  1.17896196E-11  -8.05158371E-12  -5.92079945E-04*APD 874
2613-*APD 874  -5.12450844E-12  3.01394500E-12  -9.10210275E-13  -5.88674564E-04*APD 875
2614-*APD 875  -4.07342129E-12  4.41042710E-13  3.02078986E-14                                *APD 876
2615-DMI      *PDU2                114                45                2.41664327E-11 *APD 877
2616-*APD 877  -8.23884072E-10  -1.89507211E-17  7.37385349E-19  7.39997091E-11*APD 878
2617-*APD 878  -6.63942146E-09  1.24101868E-16  -3.67497652E-18  1.23848168E-10*APD 879
2618-*APD 879  -5.04649087E-08  -1.00669823E-15  2.53489565E-17  1.74646700E-10*APD 880
2619-*APD 880  -3.87486239E-07  8.97649519E-16  -1.62362571E-16  2.24610705E-10*APD 881
2620-*APD 881  -3.05273588E-06  -3.07621387E-13  5.62473923E-15  2.45157006E-10*APD 882
2621-*APD 882  -7.20088701E-06  -1.36062429E-12  4.44535156E-14  2.67307954E-10*APD 883
2622-*APD 883  -1.70287967E-05  -5.50245613E-12  2.74323207E-13  3.07136316E-10*APD 884
2623-*APD 884  -6.25482789E-05  -4.13697548E-11  4.65472626E-12  3.00872216E-10*APD 885
2624-*APD 885  -4.58383583E-05  -2.57790456E-11  2.52848350E-12  2.93702174E-10*APD 886
2625-*APD 886  -2.23293027E-05  -6.59026046E-12  2.85838356E-13  2.92012858E-10*APD 887
2626-*APD 887  -9.56839663E-06  -9.64378750E-13  -9.48635227E-15                                *APD 888
2627-DMI      *PDU2                115                45                -1.34902549E-11 *APD 889
2628-*APD 889  1.03579487E-15  -1.90237548E-11  -7.88653352E-18  -4.13083318E-11*APD 890
2629-*APD 890  8.34714717E-15  1.24580207E-10  3.93048566E-17  -6.91348645E-11*APD 891
2630-*APD 891  6.34449633E-14  -1.01057829E-09  -2.71113859E-16  -9.74917785E-11*APD 892
2631-*APD 892  4.87151443E-13  9.01109409E-10  1.73651114E-15  -1.25382815E-10*APD 893
2632-*APD 893  3.83793431E-12  -3.08807103E-07  -6.01580960E-14  -1.36852307E-10*APD 894
2633-*APD 894  9.05302396E-12  -1.36586823E-06  -4.75442222E-13  -1.49217402E-10*APD 895
2634-*APD 895  2.14087637E-11  -5.52366510E-06  -2.93395950E-12  -1.71450604E-10*APD 896
2635-*APD 896  7.86363058E-11  -4.15292016E-05  -4.97835384E-11  -1.67953734E-10*APD 897
2636-*APD 897  5.76284298E-11  -2.58784130E-05  -2.70427986E-11  -1.63951352E-10*APD 898
2637-*APD 898  2.80726276E-11  -6.61566173E-06  -3.05711706E-12  -1.63008357E-10*APD 899
2638-*APD 899  1.25323640E-11  -9.68096174E-07  1.01459043E-13                                *APD 900
2639-DMI      *PDU2                116                45                7.94943018E-12 *APD 901
2640-*APD 901  2.20408243E-15  3.83841715E-17  -4.85098507E-12  2.43418341E-11*APD 902
2641-*APD 902  1.77620099E-14  -2.51364862E-16  2.41763137E-11  4.07392453E-11*APD 903
2642-*APD 903  1.35005397E-13  2.03903976E-15  -1.66761452E-10  5.74491704E-11*APD 904
2643-*APD 904  1.03661611E-12  -1.81816469E-15  1.06812315E-09  7.38845790E-11*APD 905
2644-*APD 905  8.16679450E-12  6.23078737E-13  -3.70030939E-08  8.06432421E-11*APD 906
2645-*APD 906  1.92640487E-11  2.75590748E-12  -2.92443247E-07  8.79296358E-11*APD 907
2646-*APD 907  4.55560173E-11  1.11450762E-11  -1.80467032E-06  1.01031045E-10*APD 908
2647-*APD 908  1.67331282E-10  8.37933195E-11  -3.06217116E-05  9.89704291E-11*APD 909
2648-*APD 909  1.22628324E-10  5.22147603E-11  -1.66339451E-05  9.66119407E-11*APD 910
2649-*APD 910  5.97361327E-11  1.33483918E-11  -1.88042486E-06  9.60562602E-11*APD 911
2650-*APD 911  2.66677791E-11  1.95332379E-12  6.24071959E-08                                *APD 912
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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD

COUNT.	1	2	3	4	5	6	7	8	9	10
2651-DMI	*FPU2	117	45							
2652-APD	913	-2.12112627E-16	3.07458484E-18	-4.64186928E-19	-9.04799235E-05	*APD	914			
2653-APD	914	-1.70922545E-15	-2.01857613E-17	2.37507625E-18	-1.51429820E-04	*APD	915			
2654-APD	915	-1.25918083E-14	1.62094882E-16	-1.77436329E-17	-2.13539504E-04	*APD	916			
2655-APD	916	-9.56725489E-14	-1.91019151E-16	1.24753633E-16	-2.74597434E-04	*APD	917			
2656-APD	917	-7.84162882E-13	4.84797376E-14	-4.54447406E-15	-2.99552688E-04	*APD	918			
2657-APD	918	-1.82988000E-12	2.10815469E-13	-3.62728815E-14	-3.25877685E-04	*APD	919			
2658-APD	919	-4.21420537E-12	8.30126874E-13	-2.16829213E-13	-3.67878238E-04	*APD	920			
2659-APD	920	-1.42057052E-11	6.11176474E-12	-4.32943351E-12	-3.83979408E-04	*APD	921			
2660-APD	921	-2.08055763E-11	1.08950626E-11	-9.29728083E-12	-3.66788823E-04	*APD	922			
2661-APD	922	-8.69820101E-12	2.38626913E-12	-9.62833112E-13	-3.63390427E-04	*APD	923			
2662-APD	923	-3.74627759E-12	3.29785027E-13	3.51468021E-14		*APD	924			
2663-DMI	*PDU2	118	45							
2664-APD	925	-4.15127710E-10	-7.77933339E-18	4.58875181E-20	4.07073958E-11	*APD	926			
2665-APD	926	-3.34514350E-09	5.10741280E-17	-2.34789789E-19	6.81290857E-11	*APD	927			
2666-APD	927	-2.54264055E-08	-4.10133353E-16	1.75405882E-18	9.60725666E-11	*APD	928			
2667-APD	928	-1.95070243E-07	4.83317635E-16	-1.23326053E-17	1.23542940E-10	*APD	929			
2668-APD	929	-1.53469318E-06	-1.22663706E-13	4.49247217E-16	1.34770362E-10	*APD	930			
2669-APD	930	-3.58127818E-06	-5.33406544E-13	3.58577846E-15	1.46614193E-10	*APD	931			
2670-APD	931	-8.24766630E-06	-2.10039191E-12	2.14348023E-14	1.65510466E-10	*APD	932			
2671-APD	932	-2.78021325E-05	-1.54640190E-11	4.27989079E-13	1.72754450E-10	*APD	933			
2672-APD	933	-4.07266489E-05	-2.75667544E-11	9.19088590E-13	1.65020303E-10	*APD	934			
2673-APD	934	-1.70233398E-05	-6.03775363E-12	9.51815666E-14	1.63491373E-10	*APD	935			
2674-APD	935	-7.33187971E-06	-8.34424055E-13	-3.47446096E-15		*APD	936			
2675-DMI	*PDU2	119	45							
2676-APD	937	4.95190072E-16	-7.89599202E-12	-1.80680317E-18	-2.68745720E-11	*APD	938			
2677-APD	938	3.99029090E-15	5.18400461E-11	9.24475830E-18	-4.49780768E-11	*APD	939			
2678-APD	939	3.03301865E-14	-4.16283674E-10	-6.90654254E-17	-6.34260422E-11	*APD	940			
2679-APD	940	2.32691796E-13	4.90565588E-10	4.85591495E-16	-8.15616880E-11	*APD	941			
2680-APD	941	1.83067624E-12	-1.24503174E-07	-1.76889380E-14	-8.89739116E-11	*APD	942			
2681-APD	942	4.27196993E-12	-5.41405541E-07	-1.41188710E-13	-9.67930736E-11	*APD	943			
2682-APD	943	5.83832460E-12	-2.13188923E-06	-8.43987207E-13	-1.09268178E-10	*APD	944			
2683-APD	944	3.31640965E-11	-1.56959140E-05	-1.68518949E-11	-1.14050588E-10	*APD	945			
2684-APD	945	4.85812640E-11	-2.79801316E-05	-3.61887742E-11	-1.08944576E-10	*APD	946			
2685-APD	946	2.03064787E-11	-6.12829535E-06	-3.74773823E-12	-1.07935202E-10	*APD	947			
2686-APD	947	8.74591805E-12	-8.46937098E-07	1.36805552E-13		*APD	948			
2687-DMI	*PDU2	120	45							
2688-APD	949	1.15642726E-15	1.54926032E-17	-1.08169897E-12	1.77196313E-11	*APD	950			
2689-APD	950	9.64093578E-15	-1.01714602E-16	5.53466387E-12	2.96560970E-11	*APD	951			
2690-APD	951	7.32806285E-14	8.16784342E-16	-4.13481749E-11	4.18196866E-11	*APD	952			
2691-APD	952	5.62205989E-13	-9.62531607E-16	2.90714564E-10	5.37773437E-11	*APD	953			
2692-APD	953	4.42309297E-12	2.44285874E-13	-1.05900355E-08	5.86645593E-11	*APD	954			
2693-APD	954	1.03214937E-11	1.06228394E-12	-8.45270165E-08	6.38200881E-11	*APD	955			
2694-APD	955	2.37703329E-11	4.18294913E-12	-5.05279331E-07	7.20455084E-11	*APD	956			
2695-APD	956	8.01276823E-11	3.07967402E-11	-1.00889220E-05	7.51987639E-11	*APD	957			
2696-APD	957	1.17377039E-10	5.48994322E-11	-2.16655462E-05	7.18321375E-11	*APD	958			
2697-APD	958	4.90624485E-11	1.22242410E-11	-2.24370069E-06	7.11666143E-11	*APD	959			
2698-APD	959	2.11309858E-11	1.66176274E-12	8.19028969E-08		*APD	960			
2699-DMI	*PDU2	121	45							
2700-APD	961	-1.21555555E-16	1.27789478E-18	1.27478820E-19	-8.65572947E-05	*APD	962			

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
2701-*APD 962 -9.75725952E-16 -8.44334767E-18 -5.73858204E-19 -1.44864651E-04*APD 963
2702-*APD 963 -7.44713739E-15 6.60871252E-17 2.64302486E-18 -2.04279000E-04*APD 964
2703-*APD 964 -5.70644877E-14 -1.26684114E-16 -4.56510640E-18 -2.62647169E-04*APD 965
2704-*APC 965 -4.48013040E-13 1.86603832E-14 4.22202514E-17 -2.86313705E-04*APD 966
2705-*APD 966 -1.02864071E-12 7.72704925E-14 2.83530118E-17 -3.10610281E-04*APD 967
2706-*APD 967 -2.27179213E-12 2.79671956E-13 7.44987500E-15 -3.43543012E-04*APD 968
2707-*APD 968 -6.53703307E-12 1.93260165E-12 -6.16888485E-13 -3.50887189E-04*APD 969
2708-*APC 969 -8.21676754E-12 2.95161378E-12 -1.21357438E-12 -3.92503804E-04*APD 970
2709-*APD 970 -2.37116576E-11 1.60579189E-11 -1.34108011E-11 -3.70889436E-04*APD 971
2710-*APD 971 -7.75063347E-12 1.92003184E-12 -1.01275433E-13 *APD 972
2711-DMI *PDU2 122 45 1.53469043E-11 *APD 973
2712-*APD 973 -2.40997666E-10 -2.15019975E-18 -3.53501936E-20 4.69935757E-11*APD 974
2713-*APD 974 -1.94178007E-09 1.42068601E-17 1.59132282E-19 7.86497395E-11*APD 975
2714-*APD 975 -1.47599479E-08 -1.11198896E-16 -7.32917436E-19 1.10906909E-10*APD 976
2715-*APC 976 -1.13099445E-07 2.13160023E-16 1.26591473E-18 1.42596102E-10*APD 977
2716-*APD 977 -8.87944907E-07 -3.13981527E-14 -1.17077796E-17 1.55445157E-10*APD 978
2717-*APD 978 -2.03872696E-06 -1.30016169E-13 -7.86236082E-18 1.68636147E-10*APD 979
2718-*APC 979 -4.50260541E-06 -4.70578925E-13 -2.06586931E-15 1.86515969E-10*APD 980
2719-*APD 980 -1.29561531E-05 -3.25181548E-12 1.71064660E-13 1.90503335E-10*APD 981
2720-*APC 981 -1.62853103E-05 -4.96641617E-12 3.36527193E-13 2.13097776E-10*APD 982
2721-*APD 982 -4.69956140E-05 -2.70192202E-11 3.71884815E-12 2.01362899E-10*APD 983
2722-*APD 983 -1.53614528E-05 -3.23066660E-12 2.80839262E-14 *APD 984
2723-DMI *PDU2 123 45 -7.20532488E-12 *APD 985
2724-*APD 985 2.94367454E-16 -2.53820576E-12 3.58109803E-19 -2.20633234E-11*APD 986
2725-*APD 986 2.37179432E-15 1.67705017E-11 -1.61206500E-18 -3.69257819E-11*APD 987
2726-*APC 987 1.80285915E-14 -1.31264860E-10 7.42470949E-18 -5.20704174E-11*APD 988
2727-*APC 988 1.38145951E-13 2.51624943E-10 -1.28241657E-17 -6.69483774E-11*APD 989
2728-*APD 989 1.06458294E-12 -3.70639874E-08 1.18603896E-16 -7.29809685E-11*APD 990
2729-*APD 990 2.49021116E-12 -1.53477686E-07 7.96484668E-17 -7.91740978E-11*APD 991
2730-*APC 991 5.49972481E-12 -5.55495433E-07 2.09279785E-14 -8.75686051E-11*APD 992
2731-*APD 992 1.58253410E-11 -3.83860879E-06 -1.73294452E-12 -8.94406632E-11*APD 993
2732-*APD 993 1.90917688E-11 -5.86261194E-06 -3.40913842E-12 -1.00048678E-10*APD 994
2733-*APD 994 5.74029713E-11 -3.18948732E-05 -3.76732257E-11 -9.45391959E-11*APD 995
2734-*APD 995 1.87633103E-11 -3.81364407E-06 -2.84500017E-13 *APD 996
2735-DMI *PDU2 124 45 4.93643407E-12 *APD 997
2736-*APD 997 6.60732074E-16 4.96365112E-18 2.25469600E-13 1.51157836E-11*APD 998
2737-*APD 998 5.32368339E-15 -3.27959775E-17 -1.01497283E-12 2.52981941E-11*APD 999
2739-*APD 999 4.04666433E-14 2.56698205E-16 4.67467298E-12 3.56739083E-11*APD1000
2739-*APD1000 3.10079924E-13 -4.92071297E-16 -8.07422532E-12 4.58669491E-11*APD1001
2740-*APC1001 2.43443547E-12 7.24813547E-14 7.46742251E-11 4.99999347E-11*APD1002
2741-*APD1002 5.58948200E-12 3.00137140E-13 5.01474834E-11 5.42429018E-11*APD1003
2742-*APD1003 1.23445794E-11 1.08631246E-12 1.31764679E-08 5.99940514E-11*APD1004
2743-*APD1004 3.55212665E-11 7.50668624E-12 -1.09107987E-06 6.12766227E-11*APD1005
2744-*APC1005 4.46486875E-11 1.14647744E-11 -2.14642751E-06 6.85442675E-11*APD1006
2745-*APD1006 1.28445642E-10 6.23728014E-11 -2.37194472E-05 6.47696619E-11*APD1007
2746-*APC1007 4.21157831E-11 7.45786505E-12 -1.79124072E-07 *APD1008
2747-DMI *PDU2 125 45 -1.34280208E-05 *APD1009
2748-*APD1009 -2.15465329E-17 4.01896622E-20 1.89448465E-20 -4.11177462E-05*APD1010
2749-*APC1010 -1.73609130E-16 -2.64014338E-19 -8.89983267E-20 -6.88157452E-05*APD1011
2750-*APC1011 -1.31960893E-15 2.11512068E-18 4.74736996E-19 -9.70389810E-05*APD1012

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SORTED BULK DATA ECHO

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CARD
COUNT.  1  ..  2  ..  3  ..  4  ..  5  ..  6  ..  7  ..  8  ..  9  .. 10  .
2751--*APD1012 -1.01133735E-14 -2.63446768E-18 -2.67542636E-18 -1.24755839E-04*APD1013
2752--*APD1013 -7.54048529E-14 6.28967915E-16 2.31471473E-17 -1.35955983E-04*APD1014
2753--*APD1014 -1.82617864E-13 2.72551951E-15 1.27764266E-16 -1.47352010E-04*APD1015
2754--*APC1015 -4.04962251E-13 1.04171636E-14 1.26980022E-15 -1.62256372E-04*APD1016
2755--*APD1016 -1.18706434E-12 1.11912216E-13 9.23005026E-15 -1.65139485E-04*APD1017
2756--*APD1017 -1.43951170E-12 1.61421332E-13 1.99719120E-14 -1.76185567E-04*APD1018
2757--*APD1018 -3.15268645E-12 7.59798637E-13 -4.56586198E-14 -2.10158585E-04*APD1019
2758--*APD1019 -1.46204437E-11 1.01905984E-11 -1.01006972E-11 *APD1020
2759--DMI *PDU2 126 45 6.54880143E-12 *APD1021
2760--*APD1021 -4.58718011E-11 -9.60760976E-20 -4.75037547E-21 2.00529870E-11*APD1022
2761--*APD1022 -4.01837008E-10 6.31144132E-19 2.23161309E-20 3.35612094E-11*APD1023
2762--*APD1023 -3.05437875E-09 -5.05634002E-18 -1.19039148E-19 4.73255879E-11*APD1024
2763--*APD1024 -2.34085071E-08 6.29787360E-18 6.70856867E-19 6.08430112E-11*APD1025
2764--*APD1025 -1.83791201E-07 -1.50359021E-15 -5.80409557E-18 6.63052807E-11*APD1026
2765--*APD1026 -4.22689027E-07 -6.51553667E-15 -3.20365860E-17 7.18630849E-11*APD1027
2766--*APD1027 -9.37329219E-07 -2.49029347E-14 -3.18399261E-16 7.91318955E-11*APD1028
2767--*APD1028 -2.74758986E-06 -2.67533717E-13 -2.31441356E-15 8.05379791E-11*APD1029
2768--*APD1029 -3.33190656E-06 -3.85888587E-13 -5.00790951E-15 8.59251142E-11*APD1030
2769--*APD1030 -7.25723706E-06 -1.81635002E-12 1.14487921E-14 1.02493652E-10*APD1031
2770--*APD1031 -3.38406058E-05 -2.43613046E-11 2.53272577E-12 *APD1032
2771--DMI *PDU2 127 45 -3.89726793E-12 *APD1033
2772--*APC1033 6.05395359E-17 -9.58256911E-14 5.81244307E-20 -1.19337725E-11*APD1034
2773--*APD1034 4.87791451E-16 6.29499111E-13 -2.73054853E-19 -1.99726624E-11*APD1035
2774--*APC1035 3.70771732E-15 -5.04316120E-12 1.45653519E-18 -2.81640128E-11*APD1036
2775--*APD1036 2.84156616E-14 6.28145886E-12 -8.20844574E-18 -3.62083835E-11*APD1037
2776--*APC1037 2.23104738E-13 -1.49967128E-09 7.10175319E-17 -3.94590471E-11*APD1038
2777--*APD1038 5.13103503E-13 -6.49855636E-09 3.91992025E-16 -4.27665681E-11*APD1039
2778--*APD1039 1.13782681E-12 -2.48380267E-08 3.89585689E-15 -4.70923162E-11*APD1040
2779--*APC1040 3.33530772E-12 -2.66836423E-07 2.83186154E-14 -4.79290913E-11*APD1041
2780--*APD1041 4.04461187E-12 -3.84882810E-07 6.12755831E-14 -5.11350406E-11*APD1042
2781--*APD1042 8.65813905E-12 -1.81161522E-06 -1.40084667E-13 -6.09951673E-11*APD1043
2782--*APD1043 4.11792234E-11 -2.42978131E-05 -3.09898357E-11 *APD1044
2783--DMI *PDU2 128 45 2.79519029E-12 *APD1045
2784--*APD1045 1.37650093E-16 1.86316281E-19 3.53059866E-14 8.55911435E-12*APD1046
2785--*APD1046 1.10910219E-15 -1.22395103E-18 -1.65859080E-13 1.43247584E-11*APD1047
2786--*APD1047 8.43032241E-15 9.80554622E-18 8.84729139E-13 2.01997308E-11*APD1048
2787--*APD1048 6.46092880E-14 -1.22131993E-17 -4.98597691E-12 2.59692962E-11*APD1049
2788--*APC1049 5.07278193E-13 2.91584888E-15 4.31374936E-11 2.83007368E-11*APD1050
2789--*APD1050 1.16665445E-12 1.26353057E-14 2.38103759E-10 3.06729364E-11*APD1051
2790--*APD1051 2.58710154E-12 4.82932074E-14 2.36642439E-09 3.37754408E-11*APD1052
2791--*APD1052 7.58356312E-12 5.18816869E-13 1.72013017E-08 3.43755996E-11*APD1053
2792--*APD1053 9.15632426E-12 7.48337427E-13 3.72200439E-08 3.66749686E-11*APD1054
2793--*APC1054 2.01409445E-11 3.52236990E-12 -8.50902779E-08 4.37468256E-11*APD1055
2794--*APC1055 9.34027439E-11 4.72428624E-11 -1.88238482E-05 *APD1056
2795--EIGR 1 GIV .0 10.64 25 25 0 .0 6EIG
2796--6EIG MAX
2797--GRID 5001 3001 19.96 .0 .0 3001
2798--GRID 5013 5001 9.000 .000 23.000 10002
2799--GRIC 5014 5001 9.000 22.500 23.000 10002
2800--GRIC 5015 5001 9.000 45.000 23.000 10002

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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

S O R T E D B U L K D A T A E C H O

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
2801-GRID	5016	5001		9.000		67.500		23.000		10002											
2802-GRID	5017	5001		9.000		90.000		23.000		10002											
2803-GRID	5018	5001		9.000		112.500		23.000		10002											
2804-GRID	5019	5001		9.000		135.000		23.000		10002											
2805-GRID	5020	5001		9.000		157.500		23.000		10002											
2806-GRID	5021	5001		9.000		180.000		23.000		10002											
2807-GRID	5026	5001		14.200		.000		31.930		10003											
2808-GRID	5027	5001		14.200		22.500		31.930		10003											
2809-GRID	5028	5001		14.200		45.000		31.930		10003											
2810-GRID	5029	5001		14.200		67.500		31.930		10003											
2811-GRID	5030	5001		14.200		90.000		31.930		10003											
2812-GRID	5031	5001		14.200		112.500		31.930		10003											
2813-GRID	5032	5001		14.200		135.000		31.930		10003											
2814-GRID	5033	5001		14.200		157.500		31.930		10003											
2815-GRID	5034	5001		14.200		180.000		31.930		10003											
2816-GRID	5039	5001		16.200		.000		40.380		10004											
2817-GRID	5040	5001		16.200		22.500		40.380		10004											
2818-GRID	5041	5001		16.200		45.000		40.380		10004											
2819-GRID	5042	5001		16.200		67.500		40.380		10004											
2820-GRID	5043	5001		16.200		90.000		40.380		10004											
2821-GRID	5044	5001		16.200		112.500		40.380		10004											
2822-GRID	5045	5001		16.200		135.000		40.380		10004											
2823-GRID	5046	5001		16.200		157.500		40.380		10004											
2824-GRID	5047	5001		16.200		180.000		40.380		10004											
2825-GRID	5052	5001		18.000		.000		48.380		10005											
2826-GRID	5053	5001		18.000		22.500		48.380		10005											
2827-GRID	5054	5001		18.000		45.000		48.380		10005											
2828-GRID	5055	5001		18.000		67.500		48.380		10005											
2829-GRID	5056	5001		18.000		90.000		48.380		10005											
2830-GRID	5057	5001		18.000		112.500		48.380		10005											
2831-GRID	5058	5001		18.000		135.000		48.380		10005											
2832-GRID	5059	5001		18.000		157.500		48.380		10005											
2833-GRID	5060	5001		18.000		180.000		48.380		10005											
2834-GRID	5065	5001		19.875		.000		56.280		10006											
2835-GRID	5066	5001		19.875		22.500		56.280		10006											
2836-GRID	5067	5001		19.875		45.000		56.280		10006											
2837-GRID	5068	5001		19.875		67.500		56.280		10006											
2838-GRID	5069	5001		19.875		90.000		56.280		10006											
2839-GRID	5070	5001		19.875		112.500		56.280		10006											
2840-GRID	5071	5001		19.875		135.000		56.280		10006											
2841-GRID	5072	5001		19.875		157.500		56.280		10006											
2842-GRID	5073	5001		19.875		180.000		56.280		10006											
2843-GRID	5078	5001		19.875		.000		65.780		5100											
2844-GRID	5079	5001		19.875		22.500		65.780		5100											
2845-GRID	5080	5001		19.875		45.000		65.780		5100											
2846-GRID	5081	5001		19.875		67.500		65.780		5100											
2847-GRID	5082	5001		19.875		90.000		65.780		5100											
2848-GRID	5083	5001		19.875		112.500		65.780		5100											
2849-GRID	5084	5001		19.875		135.000		65.780		5100											
2850-GRID	5085	5001		19.875		157.500		65.780		5100											



S O R T E D B U L K D A T A E C H O

CARD COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
2851-GRID	5088		5001		19.875		180.000		65.780		5100									
2852-GRID	5091		5001		19.875		.000		71.780		5100									
2853-GRID	5092		5001		19.875		22.500		71.780		5100									
2854-GRID	5093		5001		19.875		45.000		71.780		5100									
2855-GRID	5094		5001		19.875		67.500		71.780		5100									
2856-GRID	5095		5001		19.875		90.000		71.780		5100									
2857-GRID	5096		5001		19.875		112.500		71.780		5100									
2858-GRID	5097		5001		19.875		135.000		71.780		5100									
2859-GRID	5098		5001		19.875		157.500		71.780		5100									
2860-GRID	5099		5001		19.875		180.000		71.780		5100									
2861-GRID	5104		5001		19.875		.000		77.780		5100									
2862-GRID	5105		5001		19.875		22.500		77.780		5100									
2863-GRID	5106		5001		19.875		45.000		77.780		5100									
2864-GRID	5107		5001		19.875		67.500		77.780		5100									
2865-GRID	5108		5001		19.875		90.000		77.780		5100									
2866-GRID	5109		5001		19.875		112.500		77.780		5100									
2867-GRID	5110		5001		19.875		135.000		77.780		5100									
2868-GRID	5111		5001		19.875		157.500		77.780		5100									
2869-GRID	5112		5001		19.875		180.000		77.780		5100									
2870-GRID	5117		5001		19.8		.000		83.780		10010									
2871-GRID	5118		5001		19.8		22.500		83.780		10010									
2872-GRID	5119		5001		19.8		45.000		83.780		10010									
2873-GRID	5120		5001		19.8		67.500		83.780		10010									
2874-GRID	5121		5001		19.8		90.000		83.780		10010									
2875-GRID	5122		5001		19.8		112.500		83.780		10010									
2876-GRID	5123		5001		19.8		135.000		83.780		10010									
2877-GRID	5124		5001		19.8		157.500		83.780		10010									
2878-GRID	5125		5001		19.8		180.000		83.780		10010									
2879-GRID	5126		656		83.78		-19.41073.9071				10010									
2880-GRID	5130		5001		18.54		.0		87.93		10011									
2881-GRID	5131		5001		18.54		22.5		87.93		10011									
2882-GRID	5132		5001		18.54		45.0		87.93		10011									
2883-GRID	5133		5001		18.54		67.5		87.93		10011									
2884-GRID	5134		5001		18.54		90.0		87.93		10011									
2885-GRID	5135		5001		18.54		112.5		87.93		10011									
2886-GRID	5136		5001		18.54		135.0		87.93		10011									
2887-GRID	5137		5001		18.54		157.5		87.93		10011									
2888-GRID	5138		5001		18.54		180.0		87.93		10011									
2889-GRID	5143		5001		16.28		.0		91.28		10012									
2890-GRID	5144		5001		16.28		22.5		91.28		10012									
2891-GRID	5145		5001		16.28		45.0		91.28		10012									
2892-GRID	5146		5001		16.28		67.5		91.28		10012									
2893-GRID	5147		5001		16.28		90.0		91.28		10012									
2894-GRID	5148		5001		16.28		112.5		91.28		10012									
2895-GRID	5149		5001		16.28		135.0		91.28		10012									
2896-GRID	5150		5001		16.28		157.5		91.28		10012									
2897-GRID	5151		5001		16.28		180.0		91.28		10012									
2898-GRID	5156		5001		12.29		.0		94.53		10013									
2899-GRID	5157		5001		12.29		22.5		94.53		10013									
2900-GRID	5158		5001		12.29		45.0		94.53		10013									

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD COUNT.	1	.. 2	.. 3	.. 4	.. 5	.. 6	.. 7	.. 8	.. 9	.. 10
2901-GRID	5159	5001	12.29	67.5	94.53	10013				
2902-GRID	5160	5001	12.29	90.0	94.53	10013				
2903-GRID	5161	5001	12.29	112.5	94.53	10013				
2904-GRID	5162	5001	12.29	135.0	94.53	10013				
2905-GRID	5163	5001	12.29	157.5	94.53	10013				
2906-GRID	5164	5001	12.29	180.0	94.53	10013				
2907-GRID	5165	5001	9.274	.0	96.083	10014				
2908-GRID	5170	5001	9.274	22.5	96.083	10014				
2909-GRID	5171	5001	9.274	45.0	96.083	10014				
2910-GRID	5172	5001	9.274	67.5	96.083	10014				
2911-GRID	5173	5001	9.274	90.0	96.083	10014				
2912-GRID	5174	5001	9.274	112.5	96.083	10014				
2913-GRID	5175	5001	9.274	135.0	96.083	10014				
2914-GRID	5176	5001	9.274	157.5	96.083	10014				
2915-GRID	5177	5001	9.274	180.0	96.083	10014				
2916-GRID	5182	5001	5.266	.0	97.386	10015				
2917-GRID	5183	5001	5.266	22.5	97.386	10015				
2918-GRID	5184	5001	5.266	45.	97.386	10015				
2919-GRID	5185	5001	5.266	67.5	97.386	10015				
2920-GRID	5186	5001	5.266	90.	97.386	10015				
2921-GRID	5187	5001	5.266	112.5	97.386	10015				
2922-GRID	5188	5001	5.266	135.0	97.386	10015				
2923-GRID	5189	5001	5.266	157.5	97.386	10015				
2924-GRID	5190	5001	5.266	180.	97.386	10015				
2925-GRID	5195	5001	1.785	.0	97.912	10016				
2926-GRID	5196	5001	1.785	22.5	97.912	10016				
2927-GRID	5197	5001	1.785	45.	97.912	10016				
2928-GRID	5198	5001	1.785	67.5	97.912	10016				
2929-GRID	5199	5001	1.785	90.	97.912	10016				
2930-GRID	5200	5001	1.785	112.5	97.912	10016				
2931-GRID	5201	5001	1.785	135.0	97.912	10016				
2932-GRID	5202	5001	1.785	157.5	97.912	10016				
2933-GRID	5203	5001	1.785	180.	97.912	10016				
2934-GRID	5204	5001	.0	.0	97.98	3001				
2935-GRID	8001	696	101.86	.0	.0	696				
2936-GRID	8010	69	6.40	.0	102.55	69				
2937-GRID	8011	69	6.40	22.5	102.55	69				
2938-GRID	8012	69	6.40	45.0	102.55	69				
2939-GRID	8013	69	6.40	67.5	102.55	69				
2940-GRID	8014	69	6.40	90.0	102.55	69				
2941-GRID	8015	69	6.40	112.5	102.55	69				
2942-GRID	8016	69	6.40	135.0	102.55	69				
2943-GRID	8017	69	6.40	157.5	102.55	69				
2944-GRID	8018	69	6.40	180.0	102.55	69				
2945-GRID	8030	69	12.61	.0	105.32	69				
2946-GRID	8031	69	12.61	22.5	105.32	69				
2947-GRID	8032	69	12.61	45.0	105.32	69				
2948-GRID	8033	69	12.61	67.5	105.32	69				
2949-GRID	8034	69	12.61	90.0	105.32	69				
2950-GRID	8035	69	12.61	112.5	105.32	69				

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
2951-GRID	8036	69				12.61		135.0		105.32		69									
2952-GRID	8037	69				12.61		157.5		105.32		69									
2953-GRID	8038	69				12.61		180.0		105.32		69									
2954-GRID	8050	69				17.91		.0		110.38		69									
2955-GRID	8051	69				17.91		22.5		110.38		69									
2956-GRID	8052	69				17.91		45.0		110.38		69									
2957-GRID	8053	69				17.91		67.5		110.38		69									
2958-GRID	8054	69				17.91		90.0		110.38		69									
2959-GRID	8055	69				17.91		112.5		110.38		69									
2960-GRID	8056	69				17.91		135.0		110.38		69									
2961-GRID	8057	69				17.91		157.5		110.38		69									
2962-GRID	8058	69				17.91		180.0		110.38		69									
2963-GRID	8070	69				19.80		.0		113.70		69									
2964-GRID	8071	69				19.80		22.5		113.70		69									
2965-GRID	8072	69				19.80		45.0		113.70		69									
2966-GRID	8073	69				19.80		67.5		113.70		69									
2967-GRID	8074	696				113.70		-19.41073.9071		69											
2968-GRID	8075	69				19.80		90.0		113.70		69									
2969-GRID	8076	69				19.80		112.5		113.70		69									
2970-GRID	8077	69				19.80		135.0		113.70		69									
2971-GRID	8078	69				19.80		157.5		113.70		69									
2972-GRID	8079	69				19.80		180.0		113.70		69									
2973-GRID	8110	69				19.80		.0		91.98		69									
2974-GRID	8111	69				19.80		22.5		91.98		69									
2975-GRID	8112	69				19.80		45.0		91.98		69									
2976-GRID	8113	69				19.80		67.5		91.98		69									
2977-GRID	8114	696				91.98		-19.41073.9071		69											
2978-GRID	8115	69				19.80		90.0		91.98		69									
2979-GRID	8116	69				19.80		112.5		91.98		69									
2980-GRID	8117	69				19.80		135.0		91.98		69									
2981-GRID	8118	69				19.80		157.5		91.98		69									
2982-GRID	8119	69				19.80		180.0		91.98		69									
2983-GRID	8130	69				19.80		.0		99.98		69									
2984-GRID	8131	69				19.80		22.5		99.98		69									
2985-GRID	8132	69				19.80		45.0		99.98		69									
2986-GRID	8133	69				19.80		67.5		99.98		69									
2987-GRID	8134	696				99.98		-19.41073.9071		100											
2988-GRID	8135	69				19.80		90.0		99.98		69									
2989-GRID	8136	69				19.80		112.5		99.98		69									
2990-GRID	8137	69				19.80		135.0		99.98		69									
2991-GRID	8138	69				19.80		157.5		99.98		69									
2992-GRID	8139	69				19.80		180.0		99.98		69									
2993-GRID	8140	696				99.98		.0		3.9071		696									
2994-GRID	8150	69				19.80		.0		106.86		69									
2995-GRID	8151	69				19.80		22.5		106.86		69									
2996-GRID	8152	69				19.80		45.0		106.86		69									
2997-GRID	8153	69				19.80		67.5		106.86		69									
2998-GRID	8154	696				106.86		-19.41073.9071		69											
2999-GRID	8155	69				19.80		90.0		106.86		69									
3000-GRID	8156	69				19.80		112.5		106.86		69									

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EXTERNAL TANK V. FLUID  
HARMONIC REDUCTION

JULY 19. 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
3001-GRID	8157	69				19.80	135.0	106.86	69												
3002-GRID	8158	69				19.80	157.5	106.86	69												
3003-GRID	8159	69				19.80	180.0	106.86	69												
3004-GRID	8170	69				19.80	.0	128.35	5100												
3005-GRID	8171	69				19.80	22.5	128.35	5100												
3006-GRID	8172	69				19.80	45.0	128.35	5100												
3007-GRID	8173	69				19.80	67.5	128.35	5100												
3008-GRID	8174	69				19.80	90.0	128.35	5100												
3009-GRID	8175	69				19.80	112.5	128.35	5100												
3010-GRID	8176	69				19.80	135.0	128.35	5100												
3011-GRID	8177	69				19.80	157.5	128.35	5100												
3012-GRID	8178	69				19.80	180.0	128.35	5100												
3013-GRID	8190	69				19.80	.0	139.06	5100												
3014-GRID	8191	69				19.80	22.5	139.06	5100												
3015-GRID	8192	69				19.80	45.0	139.06	5100												
3016-GRID	8193	69				19.80	67.5	139.06	5100												
3017-GRID	8194	69				19.80	90.0	139.06	5100												
3018-GRID	8195	69				19.80	112.5	139.06	5100												
3019-GRID	8196	69				19.80	135.0	139.06	5100												
3020-GRID	8197	69				19.80	157.5	139.06	5100												
3021-GRID	8198	69				19.80	180.0	139.06	5100												
3022-GRID	8209	696				148.756	.0	21.9561	696												
3023-GRID	8210	69				19.80	.0	148.756	5100												
3024-GRID	8211	69				19.80	22.5	148.756	5100												
3025-GRID	8212	69				19.80	45.0	148.756	5100												
3026-GRID	8213	69				19.80	67.5	148.756	5100												
3027-GRID	8214	69				19.80	90.0	148.756	5100												
3028-GRID	8215	69				19.80	112.5	148.756	5100												
3029-GRID	8216	69				19.80	135.0	148.756	5100												
3030-GRID	8217	69				19.80	157.5	148.756	5100												
3031-GRID	8218	69				19.80	180.0	148.756	5100												
3032-GRID	8230	69				19.80	.0	168.75	5100												
3033-GRID	8231	69				19.80	22.5	168.75	5100												
3034-GRID	8232	69				19.80	45.0	168.75	5100												
3035-GRID	8233	69				19.80	67.5	168.75	5100												
3036-GRID	8234	69				19.80	90.0	168.75	5100												
3037-GRID	8235	69				19.80	112.5	168.75	5100												
3038-GRID	8236	69				19.80	135.0	168.75	5100												
3039-GRID	8237	69				19.80	157.5	168.75	5100												
3040-GRID	8238	69				19.80	180.0	168.75	5100												
3041-GRID	8250	69				19.80	.0	188.75	5100												
3042-GRID	8251	69				19.80	22.5	188.75	5100												
3043-GRID	8252	69				19.80	45.0	188.75	5100												
3044-GRID	8253	69				19.80	67.5	188.75	5100												
3045-GRID	8254	69				19.80	90.0	188.75	5100												
3046-GRID	8255	69				19.80	112.5	188.75	5100												
3047-GRID	8256	69				19.80	135.0	188.75	5100												
3048-GRID	8257	69				19.80	157.5	188.75	5100												
3049-GRID	8258	69				19.80	180.0	188.75	5100												
3050-GRID	8270	69				19.80	.0	209.13	5100												

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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
3051- GRID	8271	69	19.80	22.5	209.13	5100					
3052- GRID	8272	69	19.80	45.0	209.13	5100					
3053- GRID	8273	69	19.80	67.5	209.13	5100					
3054- GRID	8274	69	19.80	90.0	209.13	5100					
3055- GRID	8275	69	19.80	112.5	209.13	5100					
3056- GRID	8276	69	19.80	135.0	209.13	5100					
3057- GRID	8277	69	19.80	157.5	209.13	5100					
3058- GRID	8278	69	19.80	180.0	209.13	5100					
3059- GRID	8290	69	19.80	.0	229.156	5100					
3060- GRID	8291	69	19.80	22.5	229.156	5100					
3061- GRID	8292	69	19.80	45.0	229.156	5100					
3062- GRID	8293	69	19.80	67.5	229.156	5100					
3063- GRID	8294	69	19.80	90.0	229.156	5100					
3064- GRID	8295	69	19.80	112.5	229.156	5100					
3065- GRID	8296	69	19.80	135.0	229.156	5100					
3066- GRID	8297	69	19.80	157.5	229.156	5100					
3067- GRID	8298	69	19.80	180.0	229.156	5100					
3068- GRID	8299	696	229.156	.0	.0	696	456				
3069- GRID	8310	69	19.80	.0	237.30	5100					
3070- GRID	8311	69	19.80	22.5	237.30	5100					
3071- GRID	8312	69	19.80	45.0	237.30	5100					
3072- GRID	8313	69	19.80	67.5	237.30	5100					
3073- GRID	8314	69	19.80	90.0	237.30	5100					
3074- GRID	8315	69	19.80	112.5	237.30	5100					
3075- GRID	8316	69	19.80	135.0	237.30	5100					
3076- GRID	8317	69	19.80	157.5	237.30	5100					
3077- GRID	8318	69	19.80	180.0	237.30	5100					
3079- GRID	8328	696	245.7536.0	24.9514	696	456					
3079- GRID	8329	696	245.7536-13.75	24.9514	3002	12456					
3080- GRID	8330	69	19.80	.0	245.75365100						
3081- GRID	8331	69	19.80	11.25	245.753669						
3082- GRID	8332	69	19.80	22.5	245.75365100						
3083- GRID	8333	69	19.80	45.0	245.75365100						
3084- GRID	8334	69	19.80	56.25	245.753669						
3085- GRID	8335	69	19.80	67.5	245.75365100						
3086- GRID	8336	69	19.80	90.0	245.75365100						
3087- GRID	8337	69	19.80	112.5	245.75365100						
3088- GRID	8338	69	19.80	135.0	245.75365100						
3089- GRID	8339	69	19.80	157.5	245.75365100						
3090- GRID	8340	69	19.80	180.0	245.75365100						
3091- GRID	8341	696	245.7536.0	.0	696	456					
3092- GRID	8350	69	19.80	.0	270.988	69					
3093- GRID	8351	69	19.80	22.5	270.988	69					
3094- GRID	8352	696	270.988	-14.9702	12.9588	101					
3095- GRID	8353	69	19.80	67.5	270.988	69					
3096- GRID	8354	69	19.80	90.0	270.988	69					
3097- GRID	8355	696	270.988	-18.8181	-6.1577	101					
3098- GRID	8356	69	19.80	135.0	270.988	69					
3099- GRID	8357	69	19.80	157.5	270.988	69					
3100- GRID	8358	69	19.80	180.0	270.988	69					

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19. 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
3101- GRID	8355	696		270.988	.0	12.9588	696	456			
3102- GRID	8360	696		270.988	.0	-6.1577	696	456			
3103- GRID	8370	69		19.80	.0	258.125	20014				
3104- GRID	8371	69		19.80	22.5	258.125	20014				
3105- GRID	8372	69		19.80	45.0	258.125	20014				
3106- GRID	8373	69		19.80	67.5	258.125	20014				
3107- GRID	8374	69		19.80	90.0	258.125	20014				
3108- GRID	8375	69		19.80	112.5	258.125	20014				
3109- GRID	8376	69		19.80	135.0	258.125	20014				
3110- GRID	8377	69		19.80	157.5	258.125	20014				
3111- GRID	8378	69		19.80	180.0	258.125	20014				
3112- GRID	8390	69		17.91	.0	260.92	20015				
3113- GRID	8391	69		17.91	22.5	260.92	20015				
3114- GRID	8392	69		17.91	45.0	260.92	20015				
3115- GRID	8393	69		17.91	67.5	260.92	20015				
3116- GRID	8394	69		17.91	90.0	260.92	20015				
3117- GRID	8395	69		17.91	112.5	260.92	20015				
3118- GRID	8396	69		17.91	135.0	260.92	20015				
3119- GRID	8397	69		17.91	157.5	260.92	20015				
3120- GRID	8398	69		17.91	180.0	260.92	20015				
3121- GRID	8410	69		12.61	.0	265.98	20016				
3122- GRID	8411	69		12.61	22.5	265.98	20016				
3123- GRID	8412	69		12.61	45.0	265.98	20016				
3124- GRID	8413	69		12.61	67.5	265.98	20016				
3125- GRID	8414	69		12.61	90.0	265.98	20016				
3126- GRID	8415	69		12.61	112.5	265.98	20016				
3127- GRID	8416	69		12.61	135.0	265.98	20016				
3128- GRID	8417	69		12.61	157.5	265.98	20016				
3129- GRID	8418	69		12.61	180.0	265.98	20016				
3130- GRID	8430	69		6.40	.0	268.75	20017				
3131- GRID	8431	69		6.40	22.5	268.75	20017				
3132- GRID	8432	69		6.40	45.0	268.75	20017				
3133- GRID	8433	69		6.40	67.5	268.75	20017				
3134- GRID	8434	69		6.40	90.0	268.75	20017				
3135- GRID	8435	69		6.40	112.5	268.75	20017				
3136- GRID	8436	69		6.40	135.0	268.75	20017				
3137- GRID	8437	69		6.40	157.5	268.75	20017				
3138- GRID	8438	69		6.40	180.0	268.75	20017				
3139- GRID	8440	696		269.44	.0	.0	696				
3140- GRID	100200	5100		9.		23.	10002				
3141- GRID	100201	5100		9.		23.	10002				
3142- GRID	100202	5100		9.		23.	10002				
3143- GRID	100203	5100		9.		23.	10002				
3144- GRID	100300	5100		14.2		31.93	10003				
3145- GRID	100301	5100		14.2		31.93	10003				
3146- GRID	100302	5100		14.2		31.93	10003				
3147- GRID	100303	5100		14.2		31.93	10003				
3148- GRID	100400	5100		16.2		40.38	10004				
3149- GRID	100401	5100		16.2		40.38	10004				
3150- GRID	100402	5100		16.2		40.38	10004				

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19. 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
3151-GRID	100403	5100		16.2								40.38		10004							
3152-GRID	100500	5100		18.0								48.38		10005							
3153-GRID	100501	5100		18.0								48.38		10005							
3154-GRID	100502	5100		18.0								48.38		10005							
3155-GRID	100503	5100		18.0								48.38		10005							
3156-GRID	100500	5100		19.875								56.38		10006							
3157-GRID	100501	5100		19.875								56.38		10006							
3158-GRID	100502	5100		19.875								56.38		10006							
3159-GRID	100503	5100		19.875								56.38		10006							
3160-GRID	100700	5100		19.875								65.78		5100							
3161-GRID	100701	5100		19.875								65.78		5100							
3162-GRID	100702	5100		19.875								65.78		5100							
3163-GRID	100703	5100		19.875								65.78		5100							
3164-GRID	100800	5100		19.875								71.78		5100							
3165-GRID	100801	5100		19.875								71.78		5100							
3166-GRID	100802	5100		19.875								71.78		5100							
3167-GRID	100803	5100		19.875								71.78		5100							
3168-GRID	100900	5100		19.875								77.78		5100							
3169-GRID	100901	5100		19.875								77.78		5100							
3170-GRID	100902	5100		19.875								77.78		5100							
3171-GRID	100903	5100		19.875								77.78		5100							
3172-GRID	101000	5100		19.875								83.78		10010							
3173-GRID	101001	5100		19.875								83.78		10010							
3174-GRID	101002	5100		19.875								83.78		10010							
3175-GRID	101003	5100		19.875								83.78		10010							
3176-GRID	101100	5100		18.54								87.93		10011							
3177-GRID	101101	5100		18.54								87.93		10011							
3178-GRID	101102	5100		18.54								87.93		10011							
3179-GRID	101103	5100		18.54								87.93		10011							
3180-GRID	101200	5100		16.28								91.28		10012							
3181-GRID	101201	5100		16.28								91.28		10012							
3182-GRID	101202	5100		16.28								91.28		10012							
3183-GRID	101203	5100		16.28								91.28		10012							
3184-GRID	101300	5100		12.29								94.53		10013							
3185-GRID	101301	5100		12.29								94.53		10013							
3186-GRID	101302	5100		12.29								94.53		10013							
3187-GRID	101303	5100		12.29								94.53		10013							
3188-GRID	101400	5100		9.274								96.083		10014							
3189-GRID	101401	5100		9.274								96.083		10014							
3190-GRID	101402	5100		9.274								96.083		10014							
3191-GRID	101403	5100		9.274								96.083		10014							
3192-GRID	101500	5100		5.266								97.386		10015							
3193-GRID	101501	5100		5.266								97.386		10015							
3194-GRID	101502	5100		5.266								97.386		10015							
3195-GRID	101503	5100		5.266								97.386		10015							
3196-GRID	101600	5100		1.7875								97.912		10016							
3197-GRID	101601	5100		1.7875								97.912		10016							
3198-GRID	101602	5100		1.7875								97.912		10016							
3199-GRID	101603	5100		1.7875								97.912		10016							
3200-GRID	110100	69		19.8								91.98		69							

EXTERNAL TANK W. FLUID  
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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
3201-GRID	110101	69	19.8			91.98	69				
3202-GRID	110102	69	19.8			91.98	69				
3203-GRID	110103	69	19.8			91.98	69				
3204-GRID	110200	69	19.8			99.98	69				
3205-GRID	110201	69	19.8			99.98	69				
3206-GRID	110202	69	19.8			99.98	69				
3207-GRID	110203	69	19.8			99.98	69				
3208-GRID	110200	69	19.8			106.86	69				
3209-GRID	110301	69	19.8			106.86	69				
3210-GRID	110302	69	19.8			106.86	69				
3211-GRID	110303	69	19.8			106.86	69				
3212-GRID	110400	69	19.8			113.70	69				
3213-GRID	110401	69	19.8			113.70	69				
3214-GRID	110402	69	19.8			113.70	69				
3215-GRID	110403	69	19.8			113.70	69				
3216-GRID	110500	69	19.8			128.75	69				
3217-GRID	110501	69	19.8			128.75	69				
3218-GRID	110502	69	19.8			128.75	69				
3219-GRID	110503	69	19.8			128.75	69				
3220-GRID	110600	69	19.8			139.06	69				
3221-GRID	110601	69	19.8			139.06	69				
3222-GRID	110602	69	19.8			139.06	69				
3223-GRID	110603	69	19.8			139.06	69				
3224-GRID	110700	69	19.8			148.756	69				
3225-GRID	110701	69	19.8			148.756	69				
3226-GRID	110702	69	19.8			148.756	69				
3227-GRID	110703	69	19.8			148.756	69				
3228-GRID	110800	69	19.8			168.75	69				
3229-GRID	110801	69	19.8			168.75	69				
3230-GRID	110802	69	19.8			168.75	69				
3231-GRID	110803	69	19.8			168.75	69				
3232-GRID	110900	69	19.8			188.75	69				
3233-GRID	110901	69	19.8			188.75	69				
3234-GRID	110902	69	19.8			188.75	69				
3235-GRID	110903	69	19.8			188.75	69				
3236-GRID	111000	69	19.8			209.13	69				
3237-GRID	111001	69	19.8			209.13	69				
3238-GRID	111002	69	19.8			209.13	69				
3239-GRID	111003	69	19.8			209.13	69				
3240-GRID	111100	69	19.8			229.156	69				
3241-GRID	111101	69	19.8			229.156	69				
3242-GRID	111102	69	19.8			229.156	69				
3243-GRID	111103	69	19.8			229.156	69				
3244-GRID	111200	69	19.8			237.30	69				
3245-GRID	111201	69	19.8			237.30	69				
3246-GRID	111202	69	19.8			237.30	69				
3247-GRID	111203	69	19.8			237.30	69				
3248-GRID	111300	69	19.8			245.753669					
3249-GRID	111301	69	19.8			245.753669					
3250-GRID	111302	69	19.8			245.753669					



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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.	
3251-GRID		111303	69			19.8						245.753669										
3252-GRID		111400	69			19.8						258.125	20014									
3253-GRID		111401	69			19.8						258.125	20014									
3254-GRID		111402	69			19.8						258.125	20014									
3255-GRID		111403	69			19.8						258.125	20014									
3256-GRID		111500	69			17.91						260.92	20015									
3257-GRID		111501	69			17.91						260.92	20015									
3258-GRID		111502	69			17.91						260.92	20015									
3259-GRID		111503	69			17.91						260.92	20015									
3260-GRID		111600	69			12.61						265.98	20016									
3261-GRID		111601	69			12.61						265.98	20016									
3262-GRID		111602	69			12.61						265.98	20016									
3263-GRID		111603	69			12.61						265.98	20016									
3264-GRID		111700	69			6.40						268.75	20017									
3265-GRID		111701	69			6.40						268.75	20017									
3266-GRID		111702	69			6.40						268.75	20017									
3267-GRID		111703	69			6.40						268.75	20017									
3268-MAT1		5517	10.566						.3			2.6-4										
3269-MAT1		8010	1.0567						.30			.00031										
3270-MAT1		8400	1.0567						.30			.000052										
3271-MAT1		8500	1.0567						.30													
3272-MAT1		8600	1.0567						.30			.00031										
3273-MPC	1		5013	1					-1.		100200	1		1.00000						6M501311		
3274-6M501311				100201					1	1.00000		100202		1	1.00000						6M501321	
3275-6M501321				100203					1	1.00000												
3276-MPC	1		5013	2					-1.		100200	2		1.00000						6M501312		
3277-6M501312				100201					2	1.00000		100202		2	1.00000						6M501322	
3278-6M501322				100203					2	1.00000												
3279-MPC	1		5013	3					-1.		100200	3		.0						6M501313		
3280-6M501313				100201					3	0.0		100202		3	0.0						6M501323	
3281-6M501323				100203					3	0.0												
3282-MPC	1		5013	4					-1.		100200	4		.0						6M501314		
3283-6M501314				100201					4	0.0		100202		4	0.0						6M501324	
3284-6M501324				100203					4	0.0												
3285-MPC	1		5013	5					-1.		100200	5		.0						6M501315		
3286-6M501315				100201					5	0.0		100202		5	0.0						6M501325	
3287-6M501325				100203					5	0.0												
3288-MPC	1		5013	6					-1.		100200	6		1.00000						6M501316		
3289-6M501316				100201					6	1.00000		100202		6	1.00000						6M501326	
3290-6M501326				100203					6	1.00000												
3291-MPC	1		5014	1					-1.		100200	1		1.00000						6M501411		
3292-6M501411				100201					1	0.92388		100202		1	0.70711						6M501421	
3293-6M501421				100203					1	0.38268												
3294-MPC	1		5014	2					-1.		100200	2		1.00000						6M501412		
3295-6M501412				100201					2	0.92388		100202		2	0.70711						6M501422	
3296-6M501422				100203					2	0.38268												
3297-MPC	1		5014	3					-1.		100200	3		.0						6M501413		
3298-6M501413				100201					3	0.38268		100202		3	0.70711						6M501423	
3299-6M501423				100203					3	0.92388												
3300-MPC	1		5014	4					-1.		100200	4		.0						6M501414		

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CARD	1	2	3	4	5	6	7	8	9	10
3301-EM501414			100201		4 0.38268	100202		4 0.70711		EM501424
3302-EM501424			100203		4 0.92388					
3303-MPC	1		5014	5	-1.	100200	5	.0		EM501415
3304-EM501415			100201		5 0.38268	100202		5 0.70711		EM501425
3305-EM501425			100203		5 0.92388					
3306-MPC	1		5014	6	-1.	100200	6	1.00000		EM501416
3307-EM501416			100201		6 0.92388	100202		6 0.70711		EM501426
3308-EM501426			100203		6 0.38268					
3309-MPC	1		5015	1	-1.	100200	1	1.00000		EM501511
3310-EM501511			100201		1 0.70711	100202		1 0.00000		EM501521
3311-EM501521			100203		1-0.70711					
3312-MPC	1		5015	2	-1.	100200	2	1.00000		EM501512
3313-EM501512			100201		2 0.70711	100202		2 0.00000		EM501522
3314-EM501522			100203		2-0.70711					
3315-MPC	1		5015	3	-1.	100200	3	.0		EM501513
3316-EM501513			100201		3 0.70711	100202		3 1.00000		EM501523
3317-EM501523			100203		3 0.70711					
3318-MPC	1		5015	4	-1.	100200	4	.0		EM501514
3319-EM501514			100201		4 0.70711	100202		4 1.00000		EM501524
3320-EM501524			100203		4 0.70711					
3321-MPC	1		5015	5	-1.	100200	5	.0		EM501515
3322-EM501515			100201		5 0.70711	100202		5 1.00000		EM501525
3323-EM501525			100203		5 0.70711					
3324-MPC	1		5015	6	-1.	100200	6	1.00000		EM501516
3325-EM501516			100201		6 0.70711	100202		6 0.00000		EM501526
3326-EM501526			100203		6-0.70711					
3327-MPC	1		5016	1	-1.	100200	1	1.00000		EM501611
3328-EM501611			100201		1 0.38268	100202		1-0.70711		EM501621
3329-EM501621			100203		1-0.92388					
3330-MPC	1		5016	2	-1.	100200	2	1.00000		EM501612
3331-EM501612			100201		2 0.38268	100202		2-0.70711		EM501622
3332-EM501622			100203		2-0.92388					
3333-MPC	1		5016	3	-1.	100200	3	.0		EM501613
3334-EM501613			100201		3 0.92388	100202		3 0.70711		EM501623
3335-EM501623			100203		3-0.38268					
3336-MPC	1		5016	4	-1.	100200	4	.0		EM501614
3337-EM501614			100201		4 0.92388	100202		4 0.70711		EM501624
3338-EM501624			100203		4-0.38268					
3339-MPC	1		5016	5	-1.	100200	5	.0		EM501615
3340-EM501615			100201		5 0.92388	100202		5 0.70711		EM501625
3341-EM501625			100203		5-0.38268					
3342-MPC	1		5016	6	-1.	100200	6	1.00000		EM501616
3343-EM501616			100201		6 0.38268	100202		6-0.70711		EM501626
3344-EM501626			100203		6-0.92388					
3345-MPC	1		5017	1	-1.	100200	1	1.00000		EM501711
3346-EM501711			100201		1 0.00000	100202		1-1.00000		EM501721
3347-EM501721			100203		1-0.00000					
3348-MPC	1		5017	2	-1.	100200	2	1.00000		EM501712
3349-EM501712			100201		2 0.00000	100202		2-1.00000		EM501722
3350-EM501722			100203		2-0.00000					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
3351- MPC	1	5017	3	-1.	100200	3	.0			EM501713	
3352- EM501713		100201		3 1.00000	100202		3 0.00000			EM501723	
3353- EM501723		100203		3-1.00000							
3354- MPC	1	5017	4	-1.	100200	4	.0			EM501714	
3355- EM501714		100201		4 1.00000	100202		4 0.00000			EM501724	
3356- EM501724		100203		4-1.00000							
3357- MPC	1	5017	5	-1.	100200	5	.0			EM501715	
3358- EM501715		100201		5 1.00000	100202		5 0.00000			EM501725	
3359- EM501725		100203		5-1.00000							
3360- MPC	1	5017	6	-1.	100200	6	1.00000			EM501716	
3361- EM501716		100201		6 0.00000	100202		6-1.00000			EM501726	
3362- EM501726		100203		6-0.00000							
3363- MPC	1	5018	1	-1.	100200	1	1.00000			EM501811	
3364- EM501811		100201		1-0.38268	100202		1-0.70711			EM501821	
3365- EM501821		100203		1 0.92388							
3366- MPC	1	5018	2	-1.	100200	2	1.00000			EM501812	
3367- EM501812		100201		2-0.38268	100202		2-0.70711			EM501822	
3368- EM501822		100203		2 0.92388							
3369- MPC	1	5018	3	-1.	100200	3	.0			EM501813	
3370- EM501813		100201		3 0.92388	100202		3-0.70711			EM501823	
3371- EM501823		100203		3-0.38269							
3372- MPC	1	5018	4	-1.	100200	4	.0			EM501814	
3373- EM501814		100201		4 0.92388	100202		4-0.70711			EM501824	
3374- EM501824		100203		4-0.38269							
3375- MPC	1	5018	5	-1.	100200	5	.0			EM501815	
3376- EM501815		100201		5 0.92388	100202		5-0.70711			EM501825	
3377- EM501825		100203		5-0.38269							
3378- MPC	1	5018	6	-1.	100200	6	1.00000			EM501816	
3379- EM501816		100201		6-0.38268	100202		6-0.70711			EM501826	
3380- EM501826		100203		6 0.92388							
3381- MPC	1	5019	1	-1.	100200	1	1.00000			EM501911	
3382- EM501911		100201		1-0.70711	100202		1-0.00000			EM501921	
3383- EM501921		100203		1 0.70711							
3384- MPC	1	5019	2	-1.	100200	2	1.00000			EM501912	
3385- EM501912		100201		2-0.70711	100202		2-0.00000			EM501922	
3386- EM501922		100203		2 0.70711							
3387- MPC	1	5019	3	-1.	100200	3	.0			EM501913	
3388- EM501913		100201		3 0.70711	100202		3-1.00000			EM501923	
3389- EM501923		100203		3 0.70710							
3390- MPC	1	5019	4	-1.	100200	4	.0			EM501914	
3391- EM501914		100201		4 0.70711	100202		4-1.00000			EM501924	
3392- EM501924		100203		4 0.70710							
3393- MPC	1	5019	5	-1.	100200	5	.0			EM501915	
3394- EM501915		100201		5 0.70711	100202		5-1.00000			EM501925	
3395- EM501925		100203		5 0.70710							
3396- MPC	1	5019	6	-1.	100200	6	1.00000			EM501916	
3397- EM501916		100201		6-0.70711	100202		6-0.00000			EM501926	
3398- EM501926		100203		6 0.70711							
3399- MPC	1	5020	1	-1.	100200	1	1.00000			EM502011	
3400- EM502011		100201		1-0.92388	100202		1 0.70711			EM502021	

SORTED BULK DATA ECHO

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COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
3401-EM502021      100201      1-0.38268
3402-MPC           1      5020  2      -1.      100200  2      1.00000      EM502012
3403-EM502012      100201      2-0.92388      100202      2 0.70711      EM502022
3404-EM502022      100203      2-0.38268
3405-MPC           1      5020  3      -1.      100200  3      .0      EM502013
3406-EM502013      100201      3 0.38268      100202      3-0.70711      EM502023
3407-EM502023      100203      3 0.92388
3408-MPC           1      5020  4      -1.      100200  4      .0      EM502014
3409-EM502014      100201      4 0.38268      100202      4-0.70711      EM502024
3410-EM502024      100203      4 0.92388
3411-MPC           1      5020  5      -1.      100200  5      .0      EM502015
3412-EM502015      100201      5 0.38268      100202      5-0.70711      EM502025
3413-EM502025      100203      5 0.92388
3414-MPC           1      5020  6      -1.      100200  6      1.00000      EM502016
3415-EM502016      100201      6-0.92388      100202      6 0.70711      EM502026
3416-EM502026      100203      6-0.38268
3417-MPC           1      5021  1      -1.      100200  1      1.00000      EM502111
3418-EM502111      100201      1-1.00000      100202      1 1.00000      EM502121
3419-EM502121      100203      1-1.00000
3420-MPC           1      5021  2      -1.      100200  2      1.00000      EM502112
3421-EM502112      100201      2-1.00000      100202      2 1.00000      EM502122
3422-EM502122      100203      2-1.00000
3423-MPC           1      5021  3      -1.      100200  3      .0      EM502113
3424-EM502113      100201      3 0.00000      100202      3-0.00000      EM502123
3425-EM502123      100203      3 0.00000
3426-MPC           1      5021  4      -1.      100200  4      .0      EM502114
3427-EM502114      100201      4 0.00000      100202      4-0.00000      EM502124
3428-EM502124      100203      4 0.00000
3429-MPC           1      5021  5      -1.      100200  5      .0      EM502115
3430-EM502115      100201      5 0.00000      100202      5-0.00000      EM502125
3431-EM502125      100203      5 0.00000
3432-MPC           1      5021  6      -1.      100200  6      1.00000      EM502116
3433-EM502116      100201      6-1.00000      100202      6 1.00000      EM502126
3434-EM502126      100203      6-1.00000
3435-MPC           1      5026  1      -1.      100300  1      1.00000      EM502611
3436-EM502611      100301      1 1.00000      100302      1 1.00000      EM502621
3437-EM502621      100303      1 1.00000
3438-MPC           1      5026  2      -1.      100300  2      1.00000      EM502612
3439-EM502612      100301      2 1.00000      100302      2 1.00000      EM502622
3440-EM502622      100303      2 1.00000
3441-MPC           1      5026  3      -1.      100300  3      .0      EM502613
3442-EM502613      100301      3 0.0      100302      3 0.0      EM502623
3443-EM502623      100303      3 0.0
3444-MPC           1      5026  4      -1.      100300  4      .0      EM502614
3445-EM502614      100301      4 0.0      100302      4 0.0      EM502624
3446-EM502624      100303      4 0.0
3447-MPC           1      5026  5      -1.      100300  5      .0      EM502615
3448-EM502615      100301      5 0.0      100302      5 0.0      EM502625
3449-EM502625      100303      5 0.0
3450-MPC           1      5026  6      -1.      100300  6      1.00000      EM502616

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
3451-EM502616						100301				6	1.00000	100302				6	1.00000			EM502626	
3452-EM502626						100303				6	1.00000										
3453-MPC	1					5027	1			-1.		100300	1			1.00000				EM502711	
3454-EM502711						100301				1	0.92388	100302				1	0.70711			EM502721	
3455-EM502721						100303				1	0.38268										
3456-MPC	1					5027	2			-1.		100300	2			1.00000				EM502712	
3457-EM502712						100301				2	0.92388	100302				2	0.70711			EM502722	
3458-EM502722						100303				2	0.38268										
3459-MPC	1					5027	3			-1.		100300	3			.0				EM502713	
3460-EM502713						100301				3	0.38268	100302				3	0.70711			EM502723	
3461-EM502723						100303				3	0.92388										
3462-MPC	1					5027	4			-1.		100300	4			.0				EM502714	
3463-EM502714						100301				4	0.38268	100302				4	0.70711			EM502724	
3464-EM502724						100303				4	0.92388										
3465-MPC	1					5027	5			-1.		100300	5			.0				EM502715	
3466-EM502715						100301				5	0.38268	100302				5	0.70711			EM502725	
3467-EM502725						100303				5	0.92388										
3468-MPC	1					5027	6			-1.		100300	6			1.00000				EM502716	
3469-EM502716						100301				6	0.92388	100302				6	0.70711			EM502726	
3470-EM502726						100303				6	0.38268										
3471-MPC	1					5028	1			-1.		100300	1			1.00000				EM502811	
3472-EM502811						100301				1	0.70711	100302				1	0.00000			EM502821	
3473-EM502821						100303				1	0.70711										
3474-MPC	1					5028	2			-1.		100300	2			1.00000				EM502812	
3475-EM502812						100301				2	0.70711	100302				2	0.00000			EM502822	
3476-EM502822						100303				2	0.70711										
3477-MPC	1					5028	3			-1.		100300	3			.0				EM502813	
3478-EM502813						100301				3	0.70711	100302				3	1.00000			EM502823	
3479-EM502823						100303				3	0.70711										
3480-MPC	1					5028	4			-1.		100300	4			.0				EM502814	
3481-EM502814						100301				4	0.70711	100302				4	1.00000			EM502824	
3482-EM502824						100303				4	0.70711										
3483-MPC	1					5028	5			-1.		100300	5			.0				EM502815	
3484-EM502815						100301				5	0.70711	100302				5	1.00000			EM502825	
3485-EM502825						100303				5	0.70711										
3486-MPC	1					5028	6			-1.		100300	6			1.00000				EM502816	
3487-EM502816						100301				6	0.70711	100302				6	0.00000			EM502826	
3488-EM502826						100303				6	0.70711										
3489-MPC	1					5029	1			-1.		100300	1			1.00000				EM502911	
3490-EM502911						100301				1	0.38268	100302				1	0.70711			EM502921	
3491-EM502921						100303				1	0.92388										
3492-MPC	1					5029	2			-1.		100300	2			1.00000				EM502912	
3493-EM502912						100301				2	0.38268	100302				2	0.70711			EM502922	
3494-EM502922						100303				2	0.92388										
3495-MPC	1					5029	3			-1.		100300	3			.0				EM502913	
3496-EM502913						100301				3	0.92388	100302				3	0.70711			EM502923	
3497-EM502923						100303				3	0.38268										
3498-MPC	1					5029	4			-1.		100300	4			.0				EM502914	
3499-EM502914						100301				4	0.92388	100302				4	0.70711			EM502924	
3500-EM502924						100303				4	0.38268										

EXTERNAL TANK W. FLUID  
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CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
3501-MPC	1	5029	5	-1.	100300	5	.0			EM502915
3502-EM502915		100301		5 0.92388	100302		5 0.70711			EM502925
3503-EM502925		100303		5-0.38268						
3504-MPC	1	5029	6	-1.	100300	6	1.00000			EM502916
3505-EM502916		100301		6 0.38268	100302		6-0.70711			EM502926
3506-EM502926		100303		6-0.92388						
3507-MPC	1	5030	1	-1.	100300	1	1.00000			EM503011
3508-EM503011		100301		1 0.00000	100302		1-1.00000			EM503021
3509-EM503021		100303		1-0.00000						
3510-MPC	1	5030	2	-1.	100300	2	1.00000			EM503012
3511-EM503012		100301		2 0.00000	100302		2-1.00000			EM503022
3512-EM503022		100303		2-0.00000						
3513-MPC	1	5030	3	-1.	100300	3	.0			EM503013
3514-EM503013		100301		3 1.00000	100302		3 0.00000			EM503023
3515-EM503023		100303		3-1.00000						
3516-MPC	1	5030	4	-1.	100300	4	.0			EM503014
3517-EM503014		100301		4 1.00000	100302		4 0.00000			EM503024
3518-EM503024		100303		4-1.00000						
3519-MPC	1	5030	5	-1.	100300	5	.0			EM503015
3520-EM503015		100301		5 1.00000	100302		5 0.00000			EM503025
3521-EM503025		100303		5-1.00000						
3522-MPC	1	5030	6	-1.	100300	6	1.00000			EM503016
3523-EM503016		100301		6 0.00000	100302		6-1.00000			EM503026
3524-EM503026		100303		6-0.00000						
3525-MPC	1	5031	1	-1.	100300	1	1.00000			EM503111
3526-EM503111		100301		1-0.38268	100302		1-0.70711			EM503121
3527-EM503121		100303		1 0.92388						
3528-MPC	1	5031	2	-1.	100300	2	1.00000			EM503112
3529-EM503112		100301		2-0.38268	100302		2-0.70711			EM503122
3530-EM503122		100303		2 0.92388						
3531-MPC	1	5031	3	-1.	100300	3	.0			EM503113
3532-EM503113		100301		3 0.92388	100302		3-0.70711			EM503123
3533-EM503123		100303		3-0.38269						
3534-MPC	1	5031	4	-1.	100300	4	.0			EM503114
3535-EM503114		100301		4 0.92388	100302		4-0.70711			EM503124
3536-EM503124		100303		4-0.38269						
3537-MPC	1	5031	5	-1.	100300	5	.0			EM503115
3538-EM503115		100301		5 0.92388	100302		5-0.70711			EM503125
3539-EM503125		100303		5-0.38269						
3540-MPC	1	5031	6	-1.	100300	6	1.00000			EM503116
3541-EM503116		100301		6-0.38268	100302		6-0.70711			EM503126
3542-EM503126		100303		6 0.92388						
3543-MPC	1	5032	1	-1.	100300	1	1.00000			EM503211
3544-EM503211		100301		1-0.70711	100302		1-0.00000			EM503221
3545-EM503221		100303		1 0.70711						
3546-MPC	1	5032	2	-1.	100300	2	1.00000			EM503212
3547-EM503212		100301		2-0.70711	100302		2-0.00000			EM503222
3548-EM503222		100303		2 0.70711						
3549-MPC	1	5032	3	-1.	100300	3	.0			EM503213
3550-EM503213		100301		3 0.70711	100302		3-1.00000			EM503223

SORTED BULK DATA ECHO

CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
3551-EM503223			100303		3	0.70710					
3552-MPC	1		5032	4	-1.	100300	4		.0		EM503214
3553-EM503214			100301		4	0.70711	100302		4-1.00000		EM503224
3554-EM503224			100303		4	0.70710					
3555-MPC	1		5032	5	-1.	100300	5		.0		EM503215
3556-EM503215			100301		5	0.70711	100302		5-1.00000		EM503225
3557-EM503225			100303		5	0.70710					
3558-MPC	1		5032	6	-1.	100300	6		1.00000		EM503216
3559-EM503216			100301		6-0.70711	100302			6-0.00000		EM503226
3560-EM503226			100303		6	0.70711					
3561-MPC	1		5033	1	-1.	100300	1		1.00000		EM503311
3562-EM503311			100301		1-0.92388	100302			1 0.70711		EM503321
3563-EM503321			100303		1-0.38268						
3564-MPC	1		5033	2	-1.	100300	2		1.00000		EM503312
3565-EM503312			100301		2-0.92388	100302			2 0.70711		EM503322
3566-EM503322			100303		2-0.38268						
3567-MPC	1		5033	3	-1.	100300	3		.0		EM503313
3569-EM503313			100301		3 0.38268	100302			3-0.70711		EM503323
3569-EM503323			100303		3 0.92388						
3570-MPC	1		5033	4	-1.	100300	4		.0		EM503314
3571-EM503314			100301		4 0.38268	100302			4-0.70711		EM503324
3572-EM503324			100303		4 0.92388						
3573-MPC	1		5033	5	-1.	100300	5		.0		EM503315
3574-EM503315			100301		5 0.38268	100302			5-0.70711		EM503325
3575-EM503325			100303		5 0.92388						
3576-MPC	1		5033	6	-1.	100300	6		1.00000		EM503316
3577-EM503316			100301		6-0.92388	100302			6 0.70711		EM503326
3578-EM503326			100303		6-0.38268						
3579-MPC	1		5034	1	-1.	100300	1		1.00000		EM503411
3580-EM503411			100301		1-1.00000	100302			1 1.00000		EM503421
3581-EM503421			100303		1-1.00000						
3582-MPC	1		5034	2	-1.	100300	2		1.00000		EM503412
3583-EM503412			100301		2-1.00000	100302			2 1.00000		EM503422
3584-EM503422			100303		2-1.00000						
3585-MPC	1		5034	3	-1.	100300	3		.0		EM503413
3586-EM503413			100301		3 0.00000	100302			3-0.00000		EM503423
3587-EM503423			100303		3 0.00000						
3588-MPC	1		5034	4	-1.	100300	4		.0		EM503414
3589-EM503414			100301		4 0.00000	100302			4-0.00000		EM503424
3590-EM503424			100303		4 0.00000						
3591-MPC	1		5034	5	-1.	100300	5		.0		EM503415
3592-EM503415			100301		5 0.00000	100302			5-0.00000		EM503425
3593-EM503425			100303		5 0.00000						
3594-MPC	1		5034	6	-1.	100300	6		1.00000		EM503416
3595-EM503416			100301		6-1.00000	100302			6 1.00000		EM503426
3596-EM503426			100303		6-1.00000						
3597-MPC	1		5039	1	-1.	100400	1		1.00000		EM503911
3598-EM503911			100401		1 1.00000	100402			1 1.00000		EM503921
3599-EM503921			100403		1 1.00000						
3500-MPC	1		5039	2	-1.	100400	2		1.00000		EM503912

EXTERNAL TANK W. FLUID  
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S O R T E D B U L K D A T A E C H O										
CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 .. 10 ..
3601-EM503912				100401		2 1.00000	100402		2 1.00000	EM503922
3602-EM503922				100403		2 1.00000				
3603-MPC	1		5039	3		-1.	100400 3		.0	EM503913
3604-EM503913				100401		3 0.0	100402		3 0.0	EM503923
3605-EM503923				100403		3 0.0				
3606-MPC	1		5039	4		-1.	100400 4		.0	EM503914
3607-EM503914				100401		4 0.0	100402		4 0.0	EM503924
3608-EM503924				100403		4 0.0				
3609-MPC	1		5039	5		-1.	100400 5		.0	EM503915
3610-EM503915				100401		5 0.0	100402		5 0.0	EM503925
3611-EM503925				100403		5 0.0				
3612-MPC	1		5039	6		-1.	100400 6		1.00000	EM503916
3613-EM503916				100401		6 1.00000	100402		6 1.00000	EM503926
3614-EM503926				100403		6 1.00000				
3615-MPC	1		5040	1		-1.	100400 1		1.00000	EM504011
3616-EM504011				100401		1 0.92388	100402		1 0.70711	EM504021
3617-EM504021				100403		1 0.38268				
3618-MPC	1		5040	2		-1.	100400 2		1.00000	EM504012
3619-EM504012				100401		2 0.92388	100402		2 0.70711	EM504022
3620-EM504022				100403		2 0.38268				
3621-MPC	1		5040	3		-1.	100400 3		.0	EM504013
3622-EM504013				100401		3 0.38268	100402		3 0.70711	EM504023
3623-EM504023				100403		3 0.92388				
3624-MPC	1		5040	4		-1.	100400 4		.0	EM504014
3625-EM504014				100401		4 0.38268	100402		4 0.70711	EM504024
3626-EM504024				100403		4 0.92388				
3627-MPC	1		5040	5		-1.	100400 5		.0	EM504015
3628-EM504015				100401		5 0.38268	100402		5 0.70711	EM504025
3629-EM504025				100403		5 0.92388				
3630-MPC	1		5040	6		-1.	100400 6		1.00000	EM504016
3631-EM504016				100401		6 0.92388	100402		6 0.70711	EM504026
3632-EM504026				100403		6 0.38268				
3633-MPC	1		5041	1		-1.	100400 1		1.00000	EM504111
3634-EM504111				100401		1 0.70711	100402		1 0.00000	EM504121
3635-EM504121				100403		1-0.70711				
3636-MPC	1		5041	2		-1.	100400 2		1.00000	EM504112
3637-EM504112				100401		2 0.70711	100402		2 0.00000	EM504122
3638-EM504122				100403		2-0.70711				
3639-MPC	1		5041	3		-1.	100400 3		.0	EM504113
3640-EM504113				100401		3 0.70711	100402		3 1.00000	EM504123
3641-EM504123				100403		3 0.70711				
3642-MPC	1		5041	4		-1.	100400 4		.0	EM504114
3643-EM504114				100401		4 0.70711	100402		4 1.00000	EM504124
3644-EM504124				100403		4 0.70711				
3645-MPC	1		5041	5		-1.	100400 5		.0	EM504115
3646-EM504115				100401		5 0.70711	100402		5 1.00000	EM504125
3647-EM504125				100403		5 0.70711				
3648-MPC	1		5041	6		-1.	100400 6		1.00000	EM504116
3649-EM504116				100401		6 0.70711	100402		6 0.00000	EM504126
3650-EM504126				100403		6-0.70711				



SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
3651-MPC	1	5042	1	-1.	100400	1	1.00000		EM504211	
3652-EM504211		100401		1 0.38268	100402		1-0.70711		EM504221	
3653-EM504221		100403		1-0.92388						
3654-MPC	1	5042	2	-1.	100400	2	1.00000		EM504212	
3655-EM504212		100401		2 0.38268	100402		2-0.70711		EM504222	
3656-EM504222		100403		2-0.92388						
3657-MPC	1	5042	3	-1.	100400	3	.0		EM504213	
3658-EM504213		100401		3 0.92388	100402		3 0.70711		EM504223	
3659-EM504223		100403		3-0.38268						
3660-MPC	1	5042	4	-1.	100400	4	.0		EM504214	
3661-EM504214		100401		4 0.92388	100402		4 0.70711		EM504224	
3662-EM504224		100403		4-0.38268						
3663-MPC	1	5042	5	-1.	100400	5	.0		EM504215	
3664-EM504215		100401		5 0.92388	100402		5 0.70711		EM504225	
3665-EM504225		100403		5-0.38268						
3666-MPC	1	5042	6	-1.	100400	6	1.00000		EM504216	
3667-EM504216		100401		6 0.38268	100402		6-0.70711		EM504226	
3668-EM504226		100403		6-0.92388						
3669-MPC	1	5043	1	-1.	100400	1	1.00000		EM504311	
3670-EM504311		100401		1 0.00000	100402		1-1.00000		EM504321	
3671-EM504321		100403		1-0.00000						
3672-MPC	1	5043	2	-1.	100400	2	1.00000		EM504312	
3673-EM504312		100401		2 0.00000	100402		2-1.00000		EM504322	
3674-EM504322		100403		2-0.00000						
3675-MPC	1	5043	3	-1.	100400	3	.0		EM504313	
3676-EM504313		100401		3 1.00000	100402		3 0.00000		EM504323	
3677-EM504323		100403		3-1.00000						
3678-MPC	1	5043	4	-1.	100400	4	.0		EM504314	
3679-EM504314		100401		4 1.00000	100402		4 0.00000		EM504324	
3680-EM504324		100403		4-1.00000						
3681-MPC	1	5043	5	-1.	100400	5	.0		EM504315	
3682-EM504315		100401		5 1.00000	100402		5 0.00000		EM504325	
3683-EM504325		100403		5-1.00000						
3684-MPC	1	5043	6	-1.	100400	6	1.00000		EM504316	
3685-EM504316		100401		6 0.00000	100402		6-1.00000		EM504326	
3686-EM504326		100403		6-0.00000						
3687-MPC	1	5044	1	-1.	100400	1	1.00000		EM504411	
3688-EM504411		100401		1-0.38268	100402		1-0.70711		EM504421	
3689-EM504421		100403		1 0.92388						
3690-MPC	1	5044	2	-1.	100400	2	1.00000		EM504412	
3691-EM504412		100401		2-0.38268	100402		2-0.70711		EM504422	
3692-EM504422		100403		2 0.92388						
3693-MPC	1	5044	3	-1.	100400	3	.0		EM504413	
3694-EM504413		100401		3 0.92388	100402		3-0.70711		EM504423	
3695-EM504423		100403		3-0.38269						
3696-MPC	1	5044	4	-1.	100400	4	.0		EM504414	
3697-EM504414		100401		4 0.92388	100402		4-0.70711		EM504424	
3698-EM504424		100403		4-0.38269						
3699-MPC	1	5044	5	-1.	100400	5	.0		EM504415	
3700-EM504415		100401		5 0.92388	100402		5-0.70711		EM504425	

EXTERNAL TANK W. FLUID  
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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
3701-EM504425				100403		5-0.38269					
3702-MPC	1		5044	6		-1.	100400	6	1.00000		EM504416
3703-EM504416				100401		6-0.38268	100402		6-0.70711		EM504426
3704-EM504426				100403		6 0.92388					
3705-MPC	1		5045	1		-1.	100400	1	1.00000		EM504511
3706-EM504511				100401		1-0.70711	100402		1-0.00000		EM504521
3707-EM504521				100403		1 0.70711					
3708-MPC	1		5045	2		-1.	100400	2	1.00000		EM504512
3709-EM504512				100401		2-0.70711	100402		2-0.00000		EM504522
3710-EM504522				100403		2 0.70711					
3711-MPC	1		5045	3		-1.	100400	3	.0		EM504513
3712-EM504513				100401		3 0.70711	100402		3-1.00000		EM504523
3713-EM504523				100403		3 0.70710					
3714-MPC	1		5045	4		-1.	100400	4	.0		EM504514
3715-EM504514				100401		4 0.70711	100402		4-1.00000		EM504524
3716-EM504524				100403		4 0.70710					
3717-MPC	1		5045	5		-1.	100400	5	.0		EM504515
3718-EM504515				100401		5 0.70711	100402		5-1.00000		EM504525
3719-EM504525				100403		5 0.70710					
3720-MPC	1		5045	6		-1.	100400	6	1.00000		EM504516
3721-EM504516				100401		6-0.70711	100402		6-0.00000		EM504526
3722-EM504526				100403		6 0.70711					
3723-MPC	1		5046	1		-1.	100400	1	1.00000		EM504611
3724-EM504611				100401		1-0.92388	100402		1 0.70711		EM504621
3725-EM504621				100403		1-0.38268					
3726-MPC	1		5046	2		-1.	100400	2	1.00000		EM504612
3727-EM504612				100401		2-0.92388	100402		2 0.70711		EM504622
3728-EM504622				100403		2-0.38268					
3729-MPC	1		5046	3		-1.	100400	3	.0		EM504613
3730-EM504613				100401		3 0.38268	100402		3-0.70711		EM504623
3731-EM504623				100403		3 0.92388					
3732-MPC	1		5046	4		-1.	100400	4	.0		EM504614
3733-EM504614				100401		4 0.38268	100402		4-0.70711		EM504624
3734-EM504624				100403		4 0.92388					
3735-MPC	1		5046	5		-1.	100400	5	.0		EM504615
3736-EM504615				100401		5 0.38268	100402		5-0.70711		EM504625
3737-EM504625				100403		5 0.92388					
3738-MPC	1		5046	6		-1.	100400	6	1.00000		EM504616
3739-EM504616				100401		6-0.92388	100402		6 0.70711		EM504626
3740-EM504626				100403		6-0.38268					
3741-MPC	1		5047	1		-1.	100400	1	1.00000		EM504711
3742-EM504711				100401		1-1.00000	100402		1 1.00000		EM504721
3743-EM504721				100403		1-1.00000					
3744-MPC	1		5047	2		-1.	100400	2	1.00000		EM504712
3745-EM504712				100401		2-1.00000	100402		2 1.00000		EM504722
3746-EM504722				100403		2-1.00000					
3747-MPC	1		5047	3		-1.	100400	3	.0		EM504713
3748-EM504713				100401		3 0.00000	100402		3-0.00000		EM504723
3749-EM504723				100403		3 0.00000					
3750-MPC	1		5047	4		-1.	100400	4	.0		EM504714

SORTED BULK DATA ECHO

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
3751-EM504714		100401		4	0.00000	100402		4	0.00000		EM504724
3752-EM504724		100403		4	0.00000						
3753-MPC	1	5047	5	-1.		100400	5		.0		EM504715
3754-EM504715		100401		5	0.00000	100402		5	0.00000		EM504725
3755-EM504725		100403		5	0.00000						
3756-MPC	1	5047	6	-1.		100400	6		1.00000		EM504716
3757-EM504716		100401		6	1.00000	100402		6	1.00000		EM504726
3758-EM504726		100403		6	1.00000						
3759-MPC	1	5052	1	-1.		100500	1		1.00000		EM505211
3760-EM505211		100501		1	1.00000	100502		1	1.00000		EM505221
3761-EM505221		100503		1	1.00000						
3762-MPC	1	5052	2	-1.		100500	2		1.00000		EM505212
3763-EM505212		100501		2	1.00000	100502		2	1.00000		EM505222
3764-EM505222		100503		2	1.00000						
3765-MPC	1	5052	3	-1.		100500	3		.0		EM505213
3766-EM505213		100501		3	0.0	100502		3	0.0		EM505223
3767-EM505223		100503		3	0.0						
3768-MPC	1	5052	4	-1.		100500	4		.0		EM505214
3769-EM505214		100501		4	0.0	100502		4	0.0		EM505224
3770-EM505224		100503		4	0.0						
3771-MPC	1	5052	5	-1.		100500	5		.0		EM505215
3772-EM505215		100501		5	0.0	100502		5	0.0		EM505225
3773-EM505225		100503		5	0.0						
3774-MPC	1	5052	6	-1.		100500	6		1.00000		EM505216
3775-EM505216		100501		6	1.00000	100502		6	1.00000		EM505226
3776-EM505226		100503		6	1.00000						
3777-MPC	1	5053	1	-1.		100500	1		1.00000		EM505311
3778-EM505311		100501		1	0.92388	100502		1	0.70711		EM505321
3779-EM505321		100503		1	0.38268						
3780-MPC	1	5053	2	-1.		100500	2		1.00000		EM505312
3781-EM505312		100501		2	0.92388	100502		2	0.70711		EM505322
3782-EM505322		100503		2	0.38268						
3783-MPC	1	5053	3	-1.		100500	3		.0		EM505313
3784-EM505313		100501		3	0.38268	100502		3	0.70711		EM505323
3785-EM505323		100503		3	0.92388						
3786-MPC	1	5053	4	-1.		100500	4		.0		EM505314
3787-EM505314		100501		4	0.38268	100502		4	0.70711		EM505324
3788-EM505324		100503		4	0.92388						
3789-MPC	1	5053	5	-1.		100500	5		.0		EM505315
3790-EM505315		100501		5	0.38268	100502		5	0.70711		EM505325
3791-EM505325		100503		5	0.92388						
3792-MPC	1	5053	6	-1.		100500	6		1.00000		EM505316
3793-EM505316		100501		6	0.92388	100502		6	0.70711		EM505326
3794-EM505326		100503		6	0.38268						
3795-MPC	1	5054	1	-1.		100500	1		1.00000		EM505411
3796-EM505411		100501		1	0.70711	100502		1	0.00000		EM505421
3797-EM505421		100503		1	0.70711						
3798-MPC	1	5054	2	-1.		100500	2		1.00000		EM505412
3799-EM505412		100501		2	0.70711	100502		2	0.00000		EM505422
3800-EM505422		100503		2	0.70711						

EXTERNAL TANK W. FLUID  
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SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10
3801-MPC	1			5054		3		-1.		100500		3		.0						EM505413
3802-EM505413				100501				3 0.70711		100502				3 1.00000						EM505423
3803-EM505423				100503				3 0.70711												
3804-MPC	1			5054		4		-1.		100500		4		.0						EM505414
3805-EM505414				100501				4 0.70711		100502				4 1.00000						EM505424
3806-EM505424				100503				4 0.70711												
3807-MPC	1			5054		5		-1.		100500		5		.0						EM505415
3808-EM505415				100501				5 0.70711		100502				5 1.00000						EM505425
3809-EM505425				100503				5 0.70711												
3810-MPC	1			5054		6		-1.		100500		6		1.00000						EM505416
3811-EM505416				100501				6 0.70711		100502				6 0.00000						EM505426
3812-EM505426				100503				6-0.70711												
3813-MPC	1			5055		1		-1.		100500		1		1.00000						EM505511
3814-EM505511				100501				1 0.38268		100502				1-0.70711						EM505521
3815-EM505521				100503				1-0.92388												
3816-MPC	1			5055		2		-1.		100500		2		1.00000						EM505512
3817-EM505512				100501				2 0.38268		100502				2-0.70711						EM505522
3818-EM505522				100503				2-0.92388												
3819-MPC	1			5055		3		-1.		100500		3		.0						EM505513
3820-EM505513				100501				3 0.92388		100502				3 0.70711						EM505523
3821-EM505523				100503				3-0.38268												
3822-MPC	1			5055		4		-1.		100500		4		.0						EM505514
3823-EM505514				100501				4 0.92388		100502				4 0.70711						EM505524
3824-EM505524				100503				4-0.38268												
3825-MPC	1			5055		5		-1.		100500		5		.0						EM505515
3826-EM505515				100501				5 0.92388		100502				5 0.70711						EM505525
3827-EM505525				100503				5-0.38268												
3828-MPC	1			5055		6		-1.		100500		6		1.00000						EM505516
3829-EM505516				100501				6 0.38268		100502				6-0.70711						EM505526
3830-EM505526				100503				6-0.92388												
3831-MPC	1			5056		1		-1.		100500		1		1.00000						EM505611
3832-EM505611				100501				1 0.00000		100502				1-1.00000						EM505621
3833-EM505621				100503				1-0.00000												
3834-MPC	1			5056		2		-1.		100500		2		1.00000						EM505612
3835-EM505612				100501				2 0.00000		100502				2-1.00000						EM505622
3836-EM505622				100503				2-0.00000												
3837-MPC	1			5056		3		-1.		100500		3		.0						EM505613
3838-EM505613				100501				3 1.00000		100502				3 0.00000						EM505623
3839-EM505623				100503				3-1.00000												
3840-MPC	1			5056		4		-1.		100500		4		.0						EM505614
3841-EM505614				100501				4 1.00000		100502				4 0.00000						EM505624
3842-EM505624				100503				4-1.00000												
3843-MPC	1			5056		5		-1.		100500		5		.0						EM505615
3844-EM505615				100501				5 1.00000		100502				5 0.00000						EM505625
3845-EM505625				100503				5-1.00000												
3846-MPC	1			5056		6		-1.		100500		6		1.00000						EM505616
3847-EM505616				100501				6 0.00000		100502				6-1.00000						EM505626
3848-EM505626				100503				6-0.00000												
3849-MPC	1			5057		1		-1.		100500		1		1.00000						EM505711
3850-EM505711				100501				1-0.38268		100502				1-0.70711						EM505721

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
CJUNT.	1	..								
3851-EM505721			100503		1 0.92388					
3852-MPC	1		5057	2	-1.	100500	2	1.00000		EM505712
3853-EM505712			100501		2-0.38268	100502		2-0.70711		EM505722
3854-EM505722			100503		2 0.92388					
3855-MPC	1		5057	3	-1.	100500	3	.0		EM505713
3856-EM505713			100501		3 0.92388	100502		3-0.70711		EM505723
3857-EM505723			100503		3-0.38269					
3858-MPC	1		5057	4	-1.	100500	4	.0		EM505714
3859-EM505714			100501		4 0.92388	100502		4-0.70711		EM505724
3860-EM505724			100503		4-0.38269					
3861-MPC	1		5057	5	-1.	100500	5	.0		EM505715
3862-EM505715			100501		5 0.92388	100502		5-0.70711		EM505725
3863-EM505725			100503		5-0.38269					
3864-MPC	1		5057	6	-1.	100500	6	1.00000		EM505716
3865-EM505716			100501		6-0.38268	100502		6-0.70711		EM505726
3866-EM505726			100503		6 0.92388					
3867-MPC	1		5058	1	-1.	100500	1	1.00000		EM505811
3868-EM505811			100501		1-0.70711	100502		1-0.00000		EM505821
3869-EM505821			100503		1 0.70711					
3870-MPC	1		5058	2	-1.	100500	2	1.00000		EM505812
3871-EM505812			100501		2-0.70711	100502		2-0.00000		EM505822
3872-EM505822			100503		2 0.70711					
3873-MPC	1		5058	3	-1.	100500	3	.0		EM505813
3874-EM505813			100501		3 0.70711	100502		3-1.00000		EM505823
3875-EM505823			100503		3 0.70710					
3876-MPC	1		5058	4	-1.	100500	4	.0		EM505814
3877-EM505814			100501		4 0.70711	100502		4-1.00000		EM505824
3878-EM505824			100503		4 0.70710					
3879-MPC	1		5058	5	-1.	100500	5	.0		EM505815
3880-EM505815			100501		5 0.70711	100502		5-1.00000		EM505825
3881-EM505825			100503		5 0.70710					
3882-MPC	1		5058	6	-1.	100500	6	1.00000		EM505816
3883-EM505816			100501		6-0.70711	100502		6-0.00000		EM505826
3884-EM505826			100503		6 0.70711					
3885-MPC	1		5058	1	-1.	100500	1	1.00000		EM505911
3886-EM505911			100501		1-0.92388	100502		1 0.70711		EM505921
3887-EM505921			100503		1-0.38268					
3888-MPC	1		5058	2	-1.	100500	2	1.00000		EM505912
3889-EM505912			100501		2-0.92388	100502		2 0.70711		EM505922
3890-EM505922			100503		2-0.38268					
3891-MPC	1		5058	3	-1.	100500	3	.0		EM505913
3892-EM505913			100501		3 0.38268	100502		3-0.70711		EM505923
3893-EM505923			100503		3 0.92388					
3894-MPC	1		5058	4	-1.	100500	4	.0		EM505914
3895-EM505914			100501		4 0.38268	100502		4-0.70711		EM505924
3896-EM505924			100503		4 0.92388					
3897-MPC	1		5058	5	-1.	100500	5	.0		EM505915
3898-EM505915			100501		5 0.38268	100502		5-0.70711		EM505925
3899-EM505925			100503		5 0.92388					
3900-MPC	1		5058	6	-1.	100500	6	1.00000		EM505916

EXTERNAL TANK W. FLUID  
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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
3901-EM505916	100501	6-0.92388	100502	6 0.70711	EM505926					
3902-EM505926	100503	6-0.38268								
3903-MPC	5060 1	-1.	100500 1	1.00000	EM506011					
3904-EM506011	100501	1-1.00000	100502	1 1.00000	EM506021					
3905-EM506021	100503	1-1.00000								
3906-MPC	5060 2	-1.	100500 2	1.00000	EM506012					
3907-EM506012	100501	2-1.00000	100502	2 1.00000	EM506022					
3908-EM506022	100503	2-1.00000								
3909-MPC	5060 3	-1.	100500 3	.0	EM506013					
3910-EM506013	100501	3 0.00000	100502	3-0.00000	EM506023					
3911-EM506023	100503	3 0.00000								
3912-MPC	5060 4	-1.	100500 4	.0	EM506014					
3913-EM506014	100501	4 0.00000	100502	4-0.00000	EM506024					
3914-EM506024	100503	4 0.00000								
3915-MPC	5060 5	-1.	100500 5	.0	EM506015					
3916-EM506015	100501	5 0.00000	100502	5-0.00000	EM506025					
3917-EM506025	100503	5 0.00000								
3918-MPC	5060 6	-1.	100500 6	1.00000	EM506016					
3919-EM506016	100501	6-1.00000	100502	6 1.00000	EM506026					
3920-EM506026	100503	6-1.00000								
3921-MPC	5065 1	-1.	100600 1	1.00000	EM506511					
3922-EM506511	100601	1 1.00000	100602	1 1.00000	EM506521					
3923-EM506521	100603	1 1.00000								
3924-MPC	5065 2	-1.	100600 2	1.00000	EM506512					
3925-EM506512	100601	2 1.00000	100602	2 1.00000	EM506522					
3926-EM506522	100603	2 1.00000								
3927-MPC	5065 3	-1.	100600 3	.0	EM506513					
3928-EM506513	100601	3 0.0	100602	3 0.0	EM506523					
3929-EM506523	100603	3 0.0								
3930-MPC	5065 4	-1.	100600 4	.0	EM506514					
3931-EM506514	100601	4 0.0	100602	4 0.0	EM506524					
3932-EM506524	100603	4 0.0								
3933-MPC	5065 5	-1.	100600 5	.0	EM506515					
3934-EM506515	100601	5 0.0	100602	5 0.0	EM506525					
3935-EM506525	100603	5 0.0								
3936-MPC	5065 6	-1.	100600 6	1.00000	EM506516					
3937-EM506516	100601	6 1.00000	100602	6 1.00000	EM506526					
3938-EM506526	100603	6 1.00000								
3939-MPC	5066 1	-1.	100600 1	1.00000	EM506611					
3940-EM506611	100601	1 0.92388	100602	1 0.70711	EM506621					
3941-EM506621	100603	1 0.38268								
3942-MPC	5066 2	-1.	100600 2	1.00000	EM506612					
3943-EM506612	100601	2 0.92388	100602	2 0.70711	EM506622					
3944-EM506622	100603	2 0.38268								
3945-MPC	5066 3	-1.	100600 3	.0	EM506613					
3946-EM506613	100601	3 0.38268	100602	3 0.70711	EM506623					
3947-EM506623	100603	3 0.92388								
3948-MPC	5066 4	-1.	100600 4	.0	EM506614					
3949-EM506614	100601	4 0.38268	100602	4 0.70711	EM506624					
3950-EM506624	100603	4 0.92388								

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
3951-MPC	1			5066		5		-1.		100600		5		.0						EM506615	
3952-EM506615				100601				5 0.38268		100602				5 0.70711						EM506625	
3953-EM506625				100603				5 0.92388													
3954-MPC	1			5066		6		-1.		100600		6		1.00000						EM506616	
3955-EM506616				100601				6 0.92388		100602				6 0.70711						EM506626	
3956-EM506626				100603				6 0.38268													
3957-MPC	1			5067		1		-1.		100600		1		1.00000						EM506711	
3959-EM506711				100601				1 0.70711		100602				1 0.00000						EM506721	
3959-EM506721				100603				1-0.70711													
3960-MPC	1			5067		2		-1.		100600		2		1.00000						EM506712	
3961-EM506712				100601				2 0.70711		100602				2 0.00000						EM506722	
3962-EM506722				100603				2-0.70711													
3963-MPC	1			5067		3		-1.		100600		3		.0						EM506713	
3964-EM506713				100601				3 0.70711		100602				3 1.00000						EM506723	
3965-EM506723				100603				3 0.70711													
3966-MPC	1			5067		4		-1.		100600		4		.0						EM506714	
3967-EM506714				100601				4 0.70711		100602				4 1.00000						EM506724	
3968-EM506724				100603				4 0.70711													
3969-MPC	1			5067		5		-1.		100600		5		.0						EM506715	
3970-EM506715				100601				5 0.70711		100602				5 1.00000						EM506725	
3971-EM506725				100603				5 0.70711													
3972-MPC	1			5067		6		-1.		100600		6		1.00000						EM506716	
3973-EM506716				100601				6 0.70711		100602				6 0.00000						EM506726	
3974-EM506726				100603				6-0.70711													
3975-MPC	1			5068		1		-1.		100600		1		1.00000						EM506811	
3976-EM506811				100601				1 0.38268		100602				1-0.70711						EM506821	
3977-EM506821				100603				1-0.92388													
3978-MPC	1			5068		2		-1.		100600		2		1.00000						EM506812	
3979-EM506812				100601				2 0.38268		100602				2-0.70711						EM506822	
3980-EM506822				100603				2-0.92388													
3981-MPC	1			5068		3		-1.		100600		3		.0						EM506813	
3982-EM506813				100601				3 0.92388		100602				3 0.70711						EM506823	
3983-EM506823				100603				3-0.38268													
3984-MPC	1			5068		4		-1.		100600		4		.0						EM506814	
3985-EM506814				100601				4 0.92388		100602				4 0.70711						EM506824	
3986-EM506824				100603				4-0.38268													
3987-MPC	1			5068		5		-1.		100600		5		.0						EM506815	
3989-EM506815				100601				5 0.92388		100602				5 0.70711						EM506825	
3989-EM506825				100603				5-0.38268													
3990-MPC	1			5068		6		-1.		100600		6		1.00000						EM506816	
3991-EM506816				100601				6 0.38268		100602				6-0.70711						EM506826	
3992-EM506826				100603				6-0.92388													
3993-MPC	1			5069		1		-1.		100600		1		1.00000						EM506911	
3994-EM506911				100601				1 0.00000		100602				1-1.00000						EM506921	
3995-EM506921				100603				1-0.00000													
3996-MPC	1			5069		2		-1.		100600		2		1.00000						EM506912	
3997-EM506912				100601				2 0.00000		100602				2-1.00000						EM506922	
3998-EM506922				100603				2-0.00000													
3999-MPC	1			5069		3		-1.		100600		3		.0						EM506913	
4000-EM506913				100601				3 1.00000		100602				3 0.00000						EM506923	

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
4001-EM5C6923			100603		3-1.00000					
4002-MPC	1		5069	4	-1.	100600	4	.0		EM506914
4003-EM5C6914			100601		4 1.00000	100602		4 0.00000		EM506924
4004-EM5C6924			100603		4-1.00000					
4005-MPC	1		5069	5	-1.	100600	5	.0		EM506915
4006-EM5C6915			100601		5 1.00000	100602		5 0.00000		EM506925
4007-EM5C6925			100603		5-1.00000					
4008-MPC	1		5069	6	-1.	100600	6	1.00000		EM506916
4009-EM5C6916			100601		6 0.00000	100602		6-1.00000		EM506926
4010-EM5C6926			100603		6-0.00000					
4011-MPC	1		5070	1	-1.	100600	1	1.00000		EM507011
4012-EM507011			100601		1-0.38268	100602		1-0.70711		EM507021
4013-EM507021			100603		1 0.92388					
4014-MPC	1		5070	2	-1.	100600	2	1.00000		EM507012
4015-EM507012			100601		2-0.38268	100602		2-0.70711		EM507022
4016-EM507022			100603		2 0.92388					
4017-MPC	1		5070	3	-1.	100600	3	.0		EM507013
4018-EM507013			100601		3 0.92388	100602		3-0.70711		EM507023
4019-EM507023			100603		3-0.38269					
4020-MPC	1		5070	4	-1.	100600	4	.0		EM507014
4021-EM507014			100601		4 0.92388	100602		4-0.70711		EM507024
4022-EM507024			100603		4-0.38269					
4023-MPC	1		5070	5	-1.	100600	5	.0		EM507015
4024-EM507015			100601		5 0.92388	100602		5-0.70711		EM507025
4025-EM507025			100603		5-0.38269					
4026-MPC	1		5070	6	-1.	100600	6	1.00000		EM507016
4027-EM507016			100601		6-0.38268	100602		6-0.70711		EM507026
4028-EM507026			100603		6 0.92388					
4029-MPC	1		5071	1	-1.	100600	1	1.00000		EM507111
4030-EM507111			100601		1-0.70711	100602		1-0.00000		EM507121
4031-EM507121			100603		1 0.70711					
4032-MPC	1		5071	2	-1.	100600	2	1.00000		EM507112
4033-EM507112			100601		2-0.70711	100602		2-0.00000		EM507122
4034-EM507122			100603		2 0.70711					
4035-MPC	1		5071	3	-1.	100600	3	.0		EM507113
4036-EM507113			100601		3 0.70711	100602		3-1.00000		EM507123
4037-EM507123			100603		3 0.70710					
4038-MPC	1		5071	4	-1.	100600	4	.0		EM507114
4039-EM507114			100601		4 0.70711	100602		4-1.00000		EM507124
4040-EM507124			100603		4 0.70710					
4041-MPC	1		5071	5	-1.	100600	5	.0		EM507115
4042-EM507115			100601		5 0.70711	100602		5-1.00000		EM507125
4043-EM507125			100603		5 0.70710					
4044-MPC	1		5071	6	-1.	100600	6	1.00000		EM507116
4045-EM507116			100601		6-0.70711	100602		6-0.00000		EM507126
4046-EM507126			100603		6 0.70711					
4047-MPC	1		5072	1	-1.	100600	1	1.00000		EM507211
4048-EM507211			100601		1-0.92388	100602		1 0.70711		EM507221
4049-EM507221			100603		1-0.39268					
4050-MPC	1		5072	2	-1.	100600	2	1.00000		EM507212



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CARD	1	2	3	4	5	6	7	8	9	10
4051-EM507212	100601	2-0.92388	100602	2 0.70711	EM507222					
4052-EM507222	100603	2-0.38268								
4053-MPC	5072 3	-1.	100600 3	.0	EM507213					
4054-EM507213	100601	3 0.38268	100602	3-0.70711	EM507223					
4055-EM507223	100603	3 0.92388								
4056-MPC	5072 4	-1.	100600 4	.0	EM507214					
4057-EM507214	100601	4 0.38268	100602	4-0.70711	EM507224					
4058-EM507224	100603	4 0.92388								
4059-MPC	5072 5	-1.	100600 5	.0	EM507215					
4060-EM507215	100601	5 0.38268	100602	5-0.70711	EM507225					
4061-EM507225	100603	5 0.92388								
4062-MPC	5072 6	-1.	100600 6	1.00000	EM507216					
4063-EM507216	100601	6-0.92388	100602	6 0.70711	EM507226					
4064-EM507226	100603	6-0.38268								
4065-MPC	5073 1	-1.	100600 1	1.00000	EM507311					
4066-EM507311	100601	1-1.00000	100602	1 1.00000	EM507321					
4067-EM507321	100603	1-1.00000								
4068-MPC	5073 2	-1.	100600 2	1.00000	EM507312					
4069-EM507312	100601	2-1.00000	100602	2 1.00000	EM507322					
4070-EM507322	100603	2-1.00000								
4071-MPC	5073 3	-1.	100600 3	.0	EM507313					
4072-EM507313	100601	3 0.00000	100602	3-0.00000	EM507323					
4073-EM507323	100603	3 0.00000								
4074-MPC	5073 4	-1.	100600 4	.0	EM507314					
4075-EM507314	100601	4 0.00000	100602	4-0.00000	EM507324					
4076-EM507324	100603	4 0.00000								
4077-MPC	5073 5	-1.	100600 5	.0	EM507315					
4078-EM507315	100601	5 0.00000	100602	5-0.00000	EM507325					
4079-EM507325	100603	5 0.00000								
4080-MPC	5073 6	-1.	100600 6	1.00000	EM507316					
4081-EM507316	100601	6-1.00000	100602	6 1.00000	EM507326					
4082-EM507326	100603	6-1.00000								
4083-MPC	5078 1	-1.	100700 1	1.00000	EM507811					
4084-EM507811	100701	1 1.00000	100702	1 1.00000	EM507821					
4085-EM507821	100703	1 1.00000								
4086-MPC	5078 2	-1.	100700 2	.0	EM507812					
4087-EM507812	100701	2 0.0	100702	2 0.0	EM507822					
4088-EM507822	100703	2 0.0								
4089-MPC	5078 3	-1.	100700 3	1.00000	EM507813					
4090-EM507813	100701	3 1.00000	100702	3 1.00000	EM507823					
4091-EM507823	100703	3 1.00000								
4092-MPC	5078 4	-1.	100700 4	.0	EM507814					
4093-EM507814	100701	4 0.0	100702	4 0.0	EM507824					
4094-EM507824	100703	4 0.0								
4095-MPC	5078 5	-1.	100700 5	1.00000	EM507815					
4096-EM507815	100701	5 1.00000	100702	5 1.00000	EM507825					
4097-EM507825	100703	5 1.00000								
4098-MPC	5078 6	-1.	100700 6	.0	EM507816					
4099-EM507816	100701	6 0.0	100702	6 0.0	EM507826					
4100-EM507826	100703	6 0.0								

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
4101-MPC	1	5079	1	-1.	100700	1	1.00000			EM507911	
4102-EM507911		100701		1 0.92388	100702		1 0.70711			EM507921	
4103-EM507921		100703		1 0.38268							
4104-MPC	1	5079	2	-1.	100700	2	.0			EM507912	
4105-EM507912		100701		2 0.38268	100702		2 0.70711			EM507922	
4106-EM507922		100703		2 0.92388							
4107-MPC	1	5079	3	-1.	100700	3	1.00000			EM507913	
4108-EM507913		100701		3 0.92388	100702		3 0.70711			EM507923	
4109-EM507923		100703		3 0.38268							
4110-MPC	1	5079	4	-1.	100700	4	.0			EM507914	
4111-EM507914		100701		4 0.38268	100702		4 0.70711			EM507924	
4112-EM507924		100703		4 0.92388							
4113-MPC	1	5079	5	-1.	100700	5	1.00000			EM507915	
4114-EM507915		100701		5 0.92388	100702		5 0.70711			EM507925	
4115-EM507925		100703		5 0.38268							
4115-MPC	1	5079	6	-1.	100700	6	.0			EM507916	
4117-EM507916		100701		6 0.38268	100702		6 0.70711			EM507926	
4118-EM507926		100703		6 0.92388							
4119-MPC	1	5080	1	-1.	100700	1	1.00000			EM508011	
4120-EM508011		100701		1 0.70711	100702		1 0.00000			EM508021	
4121-EM508021		100703		1-0.70711							
4122-MPC	1	5080	2	-1.	100700	2	.0			EM508012	
4123-EM508012		100701		2 0.70711	100702		2 1.00000			EM508022	
4124-EM508022		100703		2 0.70711							
4125-MPC	1	5080	3	-1.	100700	3	1.00000			EM508013	
4126-EM508013		100701		3 0.70711	100702		3 0.00000			EM508023	
4127-EM508023		100703		3-0.70711							
4128-MPC	1	5080	4	-1.	100700	4	.0			EM508014	
4129-EM508014		100701		4 0.70711	100702		4 1.00000			EM508024	
4130-EM508024		100703		4 0.70711							
4131-MPC	1	5080	5	-1.	100700	5	1.00000			EM508015	
4132-EM508015		100701		5 0.70711	100702		5 0.00000			EM508025	
4133-EM508025		100703		5-0.70711							
4134-MPC	1	5080	6	-1.	100700	6	.0			EM508016	
4135-EM508016		100701		6 0.70711	100702		6 1.00000			EM508026	
4136-EM508026		100703		6 0.70711							
4137-MPC	1	5081	1	-1.	100700	1	1.00000			EM508111	
4138-EM508111		100701		1 0.38268	100702		1-0.70711			EM508121	
4139-EM508121		100703		1-0.92388							
4140-MPC	1	5081	2	-1.	100700	2	.0			EM508112	
4141-EM508112		100701		2 0.92388	100702		2 0.70711			EM508122	
4142-EM508122		100703		2-0.38268							
4143-MPC	1	5081	3	-1.	100700	3	1.00000			EM508113	
4144-EM508113		100701		3 0.38268	100702		3-0.70711			EM508123	
4145-EM508123		100703		3-0.92388							
4146-MPC	1	5081	4	-1.	100700	4	.0			EM508114	
4147-EM508114		100701		4 0.92388	100702		4 0.70711			EM508124	
4148-EM508124		100703		4-0.38268							
4149-MPC	1	5081	5	-1.	100700	5	1.00000			EM508115	
4150-EM508115		100701		5 0.38268	100702		5-0.70711			EM508125	

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
4151-EM508125			100703		5-0.92388					
4152-MPC	1		5081	6	-1.	100700	6	.0		EM508116
4153-EM508116			100701		6 0.92388	100702		6 0.70711		EM508126
4154-EM508126			100703		6-0.38268					
4155-MPC	1		5082	1	-1.	100700	1	1.00000		EM508211
4156-EM508211			100701		1 0.00000	100702		1-1.00000		EM508221
4157-EM508221			100703		1-0.00000					
4158-MPC	1		5082	2	-1.	100700	2	.0		EM508212
4159-EM508212			100701		2 1.00000	100702		2 0.00000		EM508222
4160-EM508222			100703		2-1.00000					
4161-MPC	1		5082	3	-1.	100700	3	1.00000		EM508213
4162-EM508213			100701		3 0.00000	100702		3-1.00000		EM508223
4163-EM508223			100703		3-0.00000					
4164-MPC	1		5082	4	-1.	100700	4	.0		EM508214
4165-EM508214			100701		4 1.00000	100702		4 0.00000		EM508224
4166-EM508224			100703		4-1.00000					
4167-MPC	1		5082	5	-1.	100700	5	1.00000		EM508215
4168-EM508215			100701		5 0.00000	100702		5-1.00000		EM508225
4169-EM508225			100703		5-0.00000					
4170-MPC	1		5082	6	-1.	100700	6	.0		EM508216
4171-EM508216			100701		6 1.00000	100702		6 0.00000		EM508226
4172-EM508226			100703		6-1.00000					
4173-MPC	1		5083	1	-1.	100700	1	1.00000		EM508311
4174-EM508311			100701		1-0.38268	100702		1-0.70711		EM508321
4175-EM508321			100703		1 0.92388					
4176-MPC	1		5083	2	-1.	100700	2	.0		EM508312
4177-EM508312			100701		2 0.92388	100702		2-0.70711		EM508322
4178-EM508322			100703		2-0.38269					
4179-MPC	1		5083	3	-1.	100700	3	1.00000		EM508313
4180-EM508313			100701		3-0.38268	100702		3-0.70711		EM508323
4181-EM508323			100703		3 0.92388					
4182-MPC	1		5083	4	-1.	100700	4	.0		EM508314
4183-EM508314			100701		4 0.92388	100702		4-0.70711		EM508324
4184-EM508324			100703		4-0.38269					
4185-MPC	1		5083	5	-1.	100700	5	1.00000		EM508315
4186-EM508315			100701		5-0.38268	100702		5-0.70711		EM508325
4187-EM508325			100703		5 0.92388					
4188-MPC	1		5083	6	-1.	100700	6	.0		EM508316
4189-EM508316			100701		6 0.92388	100702		6-0.70711		EM508326
4190-EM508326			100703		6-0.38269					
4191-MPC	1		5084	1	-1.	100700	1	1.00000		EM508411
4192-EM508411			100701		1-0.70711	100702		1-0.00000		EM508421
4193-EM508421			100703		1 0.70711					
4194-MPC	1		5084	2	-1.	100700	2	.0		EM508412
4195-EM508412			100701		2 0.70711	100702		2-1.00000		EM508422
4195-EM508422			100703		2 0.70710					
4197-MPC	1		5084	3	-1.	100700	3	1.00000		EM508413
4198-EM508413			100701		3-0.70711	100702		3-0.00000		EM508423
4199-EM508423			100703		3 0.70711					
4200-MPC	1		5084	4	-1.	100700	4	.0		EM508414

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
4201-EM508414		100701		4	0.70711	100702		4	-1.00000		EM508424
4202-EM508424		100703		4	0.70710						
4203-MPC	1	5084	5	-1.	100700	5			1.00000		EM508415
4204-EM508415		100701		5	-0.70711	100702			5	-0.00000	EM508425
4205-EM508425		100703		5	0.70711						
4206-MPC	1	5084	6	-1.	100700	6			.0		EM508416
4207-EM508416		100701		6	0.70711	100702			6	-1.00000	EM508426
4208-EM508426		100703		6	0.70710						
4209-MPC	1	5085	1	-1.	100700	1			1.00000		EM508511
4210-EM508511		100701		1	-0.92388	100702			1	0.70711	EM508521
4211-EM508521		100703		1	-0.38268						
4212-MPC	1	5085	2	-1.	100700	2			.0		EM508512
4213-EM508512		100701		2	0.38268	100702			2	-0.70711	EM508522
4214-EM508522		100703		2	0.92388						
4215-MPC	1	5085	3	-1.	100700	3			1.00000		EM508513
4216-EM508513		100701		3	-0.92388	100702			3	0.70711	EM508523
4217-EM508523		100703		3	-0.38268						
4218-MPC	1	5085	4	-1.	100700	4			.0		EM508514
4219-EM508514		100701		4	0.38268	100702			4	-0.70711	EM508524
4220-EM508524		100703		4	0.92388						
4221-MPC	1	5085	5	-1.	100700	5			1.00000		EM508515
4222-EM508515		100701		5	-0.92388	100702			5	0.70711	EM508525
4223-EM508525		100703		5	-0.38268						
4224-MPC	1	5085	6	-1.	100700	6			.0		EM508516
4225-EM508516		100701		6	0.38268	100702			6	-0.70711	EM508526
4226-EM508526		100703		6	0.92388						
4227-MPC	1	5086	1	-1.	100700	1			1.00000		EM508611
4228-EM508611		100701		1	-1.00000	100702			1	1.00000	EM508621
4229-EM508621		100703		1	-1.00000						
4230-MPC	1	5086	2	-1.	100700	2			.0		EM508612
4231-EM508612		100701		2	0.00000	100702			2	-0.00000	EM508622
4232-EM508622		100703		2	0.00000						
4233-MPC	1	5086	3	-1.	100700	3			1.00000		EM508613
4234-EM508613		100701		3	-1.00000	100702			3	1.00000	EM508623
4235-EM508623		100703		3	-1.00000						
4236-MPC	1	5086	4	-1.	100700	4			.0		EM508614
4237-EM508614		100701		4	0.00000	100702			4	-0.00000	EM508624
4238-EM508624		100703		4	0.00000						
4239-MPC	1	5086	5	-1.	100700	5			1.00000		EM508615
4240-EM508615		100701		5	-1.00000	100702			5	1.00000	EM508625
4241-EM508625		100703		5	-1.00000						
4242-MPC	1	5086	6	-1.	100700	6			.0		EM508616
4243-EM508616		100701		6	0.00000	100702			6	-0.00000	EM508626
4244-EM508626		100703		6	0.00000						
4245-MPC	1	5091	1	-1.	100800	1			1.00000		EM509111
4245-EM509111		100801		1	1.00000	100802			1	1.00000	EM509121
4247-EM509121		100803		1	1.00000						
4248-MPC	1	5091	2	-1.	100800	2			.0		EM509112
4249-EM509112		100801		2	0.0	100802			2	0.0	EM509122
4250-EM509122		100803		2	0.0						

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..	
4251-MPC	1			5091		3				-1.		100800		3		1.00000				EM509113		
4252-EM5C9113						100801				3		1.00000		100802		3		1.00000			EM509123	
4253-EM5C9123						100803				3		1.00000										
4254-MPC	1			5091		4				-1.		100800		4		.0				EM509114		
4255-EM5C9114						100801				4		0.0		100802		4		0.0			EM509124	
4256-EM5C9124						100803				4		0.0										
4257-MPC	1			5091		5				-1.		100800		5		1.00000				EM509115		
4259-EM5C9115						100801				5		1.00000		100802		5		1.00000			EM509125	
4259-EM5C9125						100803				5		1.00000										
4260-MPC	1			5091		6				-1.		100800		6		.0				EM509116		
4261-EM5C9116						100801				6		0.0		100802		6		0.0			EM509126	
4262-EM5C9126						100803				6		0.0										
4263-MPC	1			5092		1				-1.		100800		1		1.00000				EM509211		
4264-EM5C9211						100801				1		0.92388		100802		1		0.70711			EM509221	
4265-EM5C9221						100803				1		0.38268										
4266-MPC	1			5092		2				-1.		100800		2		.0				EM509212		
4267-EM5C9212						100801				2		0.38268		100802		2		0.70711			EM509222	
4268-EM5C9222						100803				2		0.92388										
4269-MPC	1			5092		3				-1.		100800		3		1.00000				EM509213		
4270-EM5C9213						100801				3		0.92388		100802		3		0.70711			EM509223	
4271-EM5C9223						100803				3		0.38268										
4272-MPC	1			5092		4				-1.		100800		4		.0				EM509214		
4273-EM5C9214						100801				4		0.38268		100802		4		0.70711			EM509224	
4274-EM5C9224						100803				4		0.92388										
4275-MPC	1			5092		5				-1.		100800		5		1.00000				EM509215		
4276-EM5C9215						100801				5		0.92388		100802		5		0.70711			EM509225	
4277-EM5C9225						100803				5		0.38268										
4279-MPC	1			5092		6				-1.		100800		6		.0				EM509216		
4279-EM5C9216						100801				6		0.38268		100802		6		0.70711			EM509226	
4280-EM5C9226						100803				6		0.92388										
4281-MPC	1			5093		1				-1.		100800		1		1.00000				EM509311		
4282-EM5C9311						100801				1		0.70711		100802		1		0.00000			EM509321	
4283-EM5C9321						100803				1		0.70711										
4284-MPC	1			5093		2				-1.		100800		2		.0				EM509312		
4285-EM5C9312						100801				2		0.70711		100802		2		1.00000			EM509322	
4286-EM5C9322						100803				2		0.70711										
4287-MPC	1			5093		3				-1.		100800		3		1.00000				EM509313		
4288-EM5C9313						100801				3		0.70711		100802		3		0.00000			EM509323	
4289-EM5C9323						100803				3		0.70711										
4290-MPC	1			5093		4				-1.		100800		4		.0				EM509314		
4291-EM5C9314						100801				4		0.70711		100802		4		1.00000			EM509324	
4292-EM5C9324						100803				4		0.70711										
4293-MPC	1			5093		5				-1.		100800		5		1.00000				EM509315		
4294-EM5C9315						100801				5		0.70711		100802		5		0.00000			EM509325	
4295-EM5C9325						100803				5		0.70711										
4296-MPC	1			5093		6				-1.		100800		6		.0				EM509316		
4297-EM5C9316						100801				6		0.70711		100802		6		1.00000			EM509326	
4298-EM5C9326						100803				6		0.70711										
4299-MPC	1			5094		1				-1.		100800		1		1.00000				EM509411		
4300-EM5C9411						100801				1		0.38268		100802		1		0.70711			EM509421	

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CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
4301-EM509421				100803		1-0.92388					
4302-MPC	1		5094	2		-1.	100800	2	.0		EM509412
4303-EM509412				100801		2 0.92388	100802		2 0.70711		EM509422
4304-EM509422				100803		2-0.38268					
4305-MPC	1		5094	3		-1.	100800	3	1.00000		EM509413
4306-EM509413				100801		3 0.38268	100802		3-0.70711		EM509423
4307-EM509423				100803		3-0.92388					
4308-MPC	1		5094	4		-1.	100800	4	.0		EM509414
4309-EM509414				100801		4 0.92388	100802		4 0.70711		EM509424
4310-EM509424				100803		4-0.38268					
4311-MPC	1		5094	5		-1.	100800	5	1.00000		EM509415
4312-EM509415				100801		5 0.38268	100802		5-0.70711		EM509425
4313-EM509425				100803		5-0.92388					
4314-MPC	1		5094	6		-1.	100800	6	.0		EM509416
4315-EM509416				100801		6 0.92388	100802		6 0.70711		EM509426
4316-EM509426				100803		6-0.38268					
4317-MPC	1		5095	1		-1.	100800	1	1.00000		EM509511
4318-EM509511				100801		1 0.00000	100802		1-1.00000		EM509521
4319-EM509521				100803		1-0.00000					
4320-MPC	1		5095	2		-1.	100800	2	.0		EM509512
4321-EM509512				100801		2 1.00000	100802		2 0.00000		EM509522
4322-EM509522				100803		2-1.00000					
4323-MPC	1		5095	3		-1.	100800	3	1.00000		EM509513
4324-EM509513				100801		3 0.00000	100802		3-1.00000		EM509523
4325-EM509523				100803		3-0.00000					
4326-MPC	1		5095	4		-1.	100800	4	.0		EM509514
4327-EM509514				100801		4 1.00000	100802		4 0.00000		EM509524
4328-EM509524				100803		4-1.00000					
4329-MPC	1		5095	5		-1.	100800	5	1.00000		EM509515
4330-EM509515				100801		5 0.00000	100802		5-1.00000		EM509525
4331-EM509525				100803		5-0.00000					
4332-MPC	1		5095	6		-1.	100800	6	.0		EM509516
4333-EM509516				100801		6 1.00000	100802		6 0.00000		EM509526
4334-EM509526				100803		6-1.00000					
4335-MPC	1		5096	1		-1.	100800	1	1.00000		EM509611
4336-EM509611				100801		1-0.38268	100802		1-0.70711		EM509621
4337-EM509621				100803		1 0.92388					
4338-MPC	1		5096	2		-1.	100800	2	.0		EM509612
4339-EM509612				100801		2 0.92388	100802		2-0.70711		EM509622
4340-EM509622				100803		2-0.38269					
4341-MPC	1		5096	3		-1.	100800	3	1.00000		EM509613
4342-EM509613				100801		3-0.38268	100802		3-0.70711		EM509623
4343-EM509623				100803		3 0.92388					
4344-MPC	1		5096	4		-1.	100800	4	.0		EM509614
4345-EM509614				100801		4 0.92388	100802		4-0.70711		EM509624
4346-EM509624				100803		4-0.38269					
4347-MPC	1		5096	5		-1.	100800	5	1.00000		EM509615
4348-EM509615				100801		5-0.38268	100802		5-0.70711		EM509625
4349-EM509625				100803		5 0.92388					
4350-MPC	1		5096	6		-1.	100800	6	.0		EM509616

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
4351-EM509616						100801				6 0.92388		100802				6-0.70711				EM509626	
4352-EM509626						100803				6-0.38269											
4353-MPC	1					5097	1			-1.		100800	1			1.00000				EM509711	
4354-EM509711						100801				1-0.70711		100802				1-0.00000				EM509721	
4355-EM509721						100803				1 0.70711											
4355-MPC	1					5097	2			-1.		100800	2			.0				EM509712	
4357-EM509712						100801				2 0.70711		100802				2-1.00000				EM509722	
4358-EM509722						100803				2 0.70710											
4359-MPC	1					5097	3			-1.		100800	3			1.00000				EM509713	
4360-EM509713						100801				3-0.70711		100802				3-0.00000				EM509723	
4361-EM509723						100803				3 0.70711											
4362-MPC	1					5097	4			-1.		100800	4			.0				EM509714	
4363-EM509714						100801				4 0.70711		100802				4-1.00000				EM509724	
4364-EM509724						100803				4 0.70710											
4365-MPC	1					5097	5			-1.		100800	5			1.00000				EM509715	
4366-EM509715						100801				5-0.70711		100802				5-0.00000				EM509725	
4367-EM509725						100803				5 0.70711											
4368-MPC	1					5097	6			-1.		100800	6			.0				EM509716	
4369-EM509716						100801				6 0.70711		100802				6-1.00000				EM509726	
4370-EM509726						100803				6 0.70710											
4371-MPC	1					5098	1			-1.		100800	1			1.00000				EM509811	
4372-EM509811						100801				1-0.92388		100802				1 0.70711				EM509821	
4373-EM509821						100803				1-0.38268											
4374-MPC	1					5098	2			-1.		100800	2			.0				EM509812	
4375-EM509812						100801				2 0.38268		100802				2-0.70711				EM509822	
4375-EM509822						100803				2 0.92388											
4377-MPC	1					5098	3			-1.		100800	3			1.00000				EM509813	
4378-EM509813						100801				3-0.92388		100802				3 0.70711				EM509823	
4379-EM509823						100803				3-0.38268											
4380-MPC	1					5098	4			-1.		100800	4			.0				EM509814	
4381-EM509814						100801				4 0.38268		100802				4-0.70711				EM509824	
4382-EM509824						100803				4 0.92388											
4383-MPC	1					5098	5			-1.		100800	5			1.00000				EM509815	
4384-EM509815						100801				5-0.92388		100802				5 0.70711				EM509825	
4385-EM509825						100803				5-0.38268											
4386-MPC	1					5098	6			-1.		100800	6			.0				EM509816	
4387-EM509816						100801				6 0.38268		100802				6-0.70711				EM509826	
4388-EM509826						100803				6 0.92388											
4389-MPC	1					5099	1			-1.		100800	1			1.00000				EM509911	
4390-EM509911						100801				1-1.00000		100802				1 1.00000				EM509921	
4391-EM509921						100803				1-1.00000											
4392-MPC	1					5099	2			-1.		100800	2			.0				EM509912	
4393-EM509912						100801				2 0.00000		100802				2-0.00000				EM509922	
4394-EM509922						100803				2 0.00000											
4395-MPC	1					5099	3			-1.		100800	3			1.00000				EM509913	
4396-EM509913						100801				3-1.00000		100802				3 1.00000				EM509923	
4397-EM509923						100803				3-1.00000											
4398-MPC	1					5099	4			-1.		100800	4			.0				EM509914	
4399-EM509914						100801				4 0.00000		100802				4-0.00000				EM509924	
4400-EM509924						100803				4 0.00000											

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
4401-MPC	1			5099		5		-1.		100800		5		1.00000						EM509915	
4402-EM509915						100801		5-1.00000		100802				5		1.00000				EM509925	
4403-EM509925						100803		5-1.00000													
4404-MPC	1			5099		6		-1.		100800		6		.0						EM509916	
4405-EM509916						100801		6 0.00000		100802				6-0.00000						EM509926	
4406-EM509926						100803		6 0.00000													
4407-MPC	1			5104		1		-1.		100900		1		1.00000						EM510411	
4408-EM510411						100901		1 1.00000		100902				1		1.00000				EM510421	
4409-EM510421						100903		1 1.00000													
4410-MPC	1			5104		2		-1.		100900		2		.0						EM510412	
4411-EM510412						100901		2 0.0		100902				2		0.0				EM510422	
4412-EM510422						100903		2 0.0													
4413-MPC	1			5104		3		-1.		100900		3		1.00000						EM510413	
4414-EM510413						100901		3 1.00000		100902				3		1.00000				EM510423	
4415-EM510423						100903		3 1.00000													
4416-MPC	1			5104		4		-1.		100900		4		.0						EM510414	
4417-EM510414						100901		4 0.0		100902				4		0.0				EM510424	
4418-EM510424						100903		4 0.0													
4419-MPC	1			5104		5		-1.		100900		5		1.00000						EM510415	
4420-EM510415						100901		5 1.00000		100902				5		1.00000				EM510425	
4421-EM510425						100903		5 1.00000													
4422-MPC	1			5104		6		-1.		100900		6		.0						EM510416	
4423-EM510416						100901		6 0.0		100902				6		0.0				EM510426	
4424-EM510426						100903		6 0.0													
4425-MPC	1			5105		1		-1.		100900		1		1.00000						EM510511	
4426-EM510511						100901		1 0.92388		100902				1		0.70711				EM510521	
4427-EM510521						100903		1 0.38268													
4428-MPC	1			5105		2		-1.		100900		2		.0						EM510512	
4429-EM510512						100901		2 0.38268		100902				2		0.70711				EM510522	
4430-EM510522						100903		2 0.92388													
4431-MPC	1			5105		3		-1.		100900		3		1.00000						EM510513	
4432-EM510513						100901		3 0.92388		100902				3		0.70711				EM510523	
4433-EM510523						100903		3 0.38268													
4434-MPC	1			5105		4		-1.		100900		4		.0						EM510514	
4435-EM510514						100901		4 0.38268		100902				4		0.70711				EM510524	
4436-EM510524						100903		4 0.92388													
4437-MPC	1			5105		5		-1.		100900		5		1.00000						EM510515	
4438-EM510515						100901		5 0.92388		100902				5		0.70711				EM510525	
4439-EM510525						100903		5 0.38268													
4440-MPC	1			5105		6		-1.		100900		6		.0						EM510516	
4441-EM510516						100901		6 0.38268		100902				6		0.70711				EM510526	
4442-EM510526						100903		6 0.92388													
4443-MPC	1			5106		1		-1.		100900		1		1.00000						EM510611	
4444-EM510611						100901		1 0.70711		100902				1		0.00000				EM510621	
4445-EM510621						100903		1-0.70711													
4446-MPC	1			5106		2		-1.		100900		2		.0						EM510612	
4447-EM510612						100901		2 0.70711		100902				2		1.00000				EM510622	
4448-EM510622						100903		2 0.70711													
4449-MPC	1			5106		3		-1.		100900		3		1.00000						EM510613	
4450-EM510613						100901		3 0.70711		100902				3		0.00000				EM510623	



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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
4451-EM510623	1	100903		3-0.70711						
4452-MPC	1	5106	4	-1.	100900	4		.0		EM510614
4453-EM510614		100901		4 0.70711	100902			4 1.00000		EM510624
4454-EM510624		100903		4 0.70711						
4455-MPC	1	5106	5	-1.	100900	5		1.00000		EM510615
4456-EM510615		100901		5 0.70711	100902			5 0.00000		EM510625
4457-EM510625		100903		5-0.70711						
4458-MPC	1	5106	6	-1.	100900	6		.0		EM510616
4459-EM510616		100901		6 0.70711	100902			6 1.00000		EM510626
4460-EM510626		100903		6 0.70711						
4461-MPC	1	5107	1	-1.	100900	1		1.00000		EM510711
4462-EM510711		100901		1 0.38268	100902			1-0.70711		EM510721
4463-EM510721		100903		1-0.92388						
4464-MPC	1	5107	2	-1.	100900	2		.0		EM510712
4465-EM510712		100901		2 0.92388	100902			2 0.70711		EM510722
4466-EM510722		100903		2-0.38268						
4467-MPC	1	5107	3	-1.	100900	3		1.00000		EM510713
4468-EM510713		100901		3 0.38268	100902			3-0.70711		EM510723
4469-EM510723		100903		3-0.92388						
4470-MPC	1	5107	4	-1.	100900	4		.0		EM510714
4471-EM510714		100901		4 0.92388	100902			4 0.70711		EM510724
4472-EM510724		100903		4-0.38268						
4473-MPC	1	5107	5	-1.	100900	5		1.00000		EM510715
4474-EM510715		100901		5 0.38268	100902			5-0.70711		EM510725
4475-EM510725		100903		5-0.92388						
4476-MPC	1	5107	6	-1.	100900	6		.0		EM510716
4477-EM510716		100901		6 0.92388	100902			6 0.70711		EM510726
4478-EM510726		100903		6-0.38268						
4479-MPC	1	5108	1	-1.	100900	1		1.00000		EM510811
4480-EM510811		100901		1 0.00000	100902			1-1.00000		EM510821
4481-EM510821		100903		1-0.00000						
4482-MPC	1	5108	2	-1.	100900	2		.0		EM510812
4483-EM510812		100901		2 1.00000	100902			2 0.00000		EM510822
4484-EM510822		100903		2-1.00000						
4485-MPC	1	5108	3	-1.	100900	3		1.00000		EM510813
4486-EM510813		100901		3 0.00000	100902			3-1.00000		EM510823
4487-EM510823		100903		3-0.00000						
4488-MPC	1	5108	4	-1.	100900	4		.0		EM510814
4489-EM510814		100901		4 1.00000	100902			4 0.00000		EM510824
4490-EM510824		100903		4-1.00000						
4491-MPC	1	5108	5	-1.	100900	5		1.00000		EM510815
4492-EM510815		100901		5 0.00000	100902			5-1.00000		EM510825
4493-EM510825		100903		5-0.00000						
4494-MPC	1	5108	6	-1.	100900	6		.0		EM510816
4495-EM510816		100901		6 1.00000	100902			6 0.00000		EM510826
4496-EM510826		100903		6-1.00000						
4497-MPC	1	5109	1	-1.	100900	1		1.00000		EM510911
4498-EM510911		100901		1-0.38268	100902			1-0.70711		EM510921
4499-EM510921		100903		1 0.92388						
4500-MPC	1	5109	2	-1.	100900	2		.0		EM510912

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CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
4501-EM510912				100901		2 0.92388	100902		2-0.70711		EM510922
4502-EM510922				100903		2-0.38269					
4503-MPC	1		5109	3		-1.	100900	3	1.00000		EM510913
4504-EM510913				100901		3-0.38268	100902		3-0.70711		EM510923
4505-EM510923				100903		3 0.92388					
4506-MPC	1		5109	4		-1.	100900	4	.0		EM510914
4507-EM510914				100901		4 0.92388	100902		4-0.70711		EM510924
4508-EM510924				100903		4-0.38269					
4509-MPC	1		5109	5		-1.	100900	5	1.00000		EM510915
4510-EM510915				100901		5-0.38268	100902		5-0.70711		EM510925
4511-EM510925				100903		5 0.92388					
4512-MPC	1		5109	6		-1.	100900	6	.0		EM510916
4513-EM510916				100901		6 0.92388	100902		6-0.70711		EM510926
4514-EM510926				100903		6-0.38269					
4515-MPC	1		5110	1		-1.	100900	1	1.00000		EM511011
4516-EM511011				100901		1-0.70711	100902		1-0.00000		EM511021
4517-EM511021				100903		1 0.70711					
4518-MPC	1		5110	2		-1.	100900	2	.0		EM511012
4519-EM511012				100901		2 0.70711	100902		2-1.00000		EM511022
4520-EM511022				100903		2 0.70710					
4521-MPC	1		5110	3		-1.	100900	3	1.00000		EM511013
4522-EM511013				100901		3-0.70711	100902		3-0.00000		EM511023
4523-EM511023				100903		3 0.70711					
4524-MPC	1		5110	4		-1.	100900	4	.0		EM511014
4525-EM511014				100901		4 0.70711	100902		4-1.00000		EM511024
4526-EM511024				100903		4 0.70710					
4527-MPC	1		5110	5		-1.	100900	5	1.00000		EM511015
4528-EM511015				100901		5-0.70711	100902		5-0.00000		EM511025
4529-EM511025				100903		5 0.70711					
4530-MPC	1		5110	6		-1.	100900	6	.0		EM511016
4531-EM511016				100901		6 0.70711	100902		6-1.00000		EM511026
4532-EM511026				100903		6 0.70710					
4533-MPC	1		5111	1		-1.	100900	1	1.00000		EM511111
4534-EM511111				100901		1-0.92388	100902		1 0.70711		EM511121
4535-EM511121				100903		1-0.38268					
4536-MPC	1		5111	2		-1.	100900	2	.0		EM511112
4537-EM511112				100901		2 0.38268	100902		2-0.70711		EM511122
4538-EM511122				100903		2 0.92388					
4539-MPC	1		5111	3		-1.	100900	3	1.00000		EM511113
4540-EM511113				100901		3-0.92388	100902		3 0.70711		EM511123
4541-EM511123				100903		3-0.38268					
4542-MPC	1		5111	4		-1.	100900	4	.0		EM511114
4543-EM511114				100901		4 0.38268	100902		4-0.70711		EM511124
4544-EM511124				100903		4 0.92388					
4545-MPC	1		5111	5		-1.	100900	5	1.00000		EM511115
4546-EM511115				100901		5-0.92388	100902		5 0.70711		EM511125
4547-EM511125				100903		5-0.38268					
4548-MPC	1		5111	6		-1.	100900	6	.0		EM511116
4549-EM511116				100901		6 0.38268	100902		6-0.70711		EM511126
4550-EM511126				100903		6 0.92388					

SORTED BULK DATA ECHO

CARD

COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
4551-MPC	1		5112		1		-1.		100900		1		1.00000						EM511211	
4552-EM511211					100901		1-1.00000		100902				1		1.00000				EM511221	
4553-EM511221					100903		1-1.00000													
4554-MPC	1		5112		2		-1.		100900		2		.0						EM511212	
4555-EM511212					100901		2		0.00000		100902		2-0.00000						EM511222	
4556-EM511222					100903		2		0.00000											
4557-MPC	1		5112		3		-1.		100900		3		1.00000						EM511213	
4558-EM511213					100901		3-1.00000		100902				3		1.00000				EM511223	
4559-EM511223					100903		3-1.00000													
4560-MPC	1		5112		4		-1.		100900		4		.0						EM511214	
4561-EM511214					100901		4		0.00000		100902		4-0.00000						EM511224	
4562-EM511224					100903		4		0.00000											
4563-MPC	1		5112		5		-1.		100900		5		1.00000						EM511215	
4564-EM511215					100901		5-1.00000		100902				5		1.00000				EM511225	
4565-EM511225					100903		5-1.00000													
4566-MPC	1		5112		6		-1.		100900		6		.0						EM511216	
4567-EM511216					100901		6		0.00000		100902		6-0.00000						EM511226	
4568-EM511226					100903		6		0.00000											
4569-MPC	1		5117		1		-1.		101000		1		1.00000						EM511711	
4570-EM511711					101001		1		1.00000		101002		1		1.00000				EM511721	
4571-EM511721					101003		1		1.00000											
4572-MPC	1		5117		2		-1.		101000		2		1.00000						EM511712	
4573-EM511712					101001		2		1.00000		101002		2		1.00000				EM511722	
4574-EM511722					101003		2		1.00000											
4575-MPC	1		5117		3		-1.		101000		3		.0						EM511713	
4576-EM511713					101001		3		0.0		101002		3		0.0				EM511723	
4577-EM511723					101003		3		0.0											
4578-MPC	1		5117		4		-1.		101000		4		.0						EM511714	
4579-EM511714					101001		4		0.0		101002		4		0.0				EM511724	
4580-EM511724					101003		4		0.0											
4581-MPC	1		5117		5		-1.		101000		5		.0						EM511715	
4582-EM511715					101001		5		0.0		101002		5		0.0				EM511725	
4583-EM511725					101003		5		0.0											
4584-MPC	1		5117		6		-1.		101000		6		1.00000						EM511716	
4585-EM511716					101001		6		1.00000		101002		6		1.00000				EM511726	
4586-EM511726					101003		6		1.00000											
4587-MPC	1		5118		1		-1.		101000		1		1.00000						EM511811	
4588-EM511811					101001		1		0.92388		101002		1		0.70711				EM511821	
4589-EM511821					101003		1		0.38268											
4590-MPC	1		5118		2		-1.		101000		2		1.00000						EM511812	
4591-EM511812					101001		2		0.92388		101002		2		0.70711				EM511822	
4592-EM511822					101003		2		0.38268											
4593-MPC	1		5118		3		-1.		101000		3		.0						EM511813	
4594-EM511813					101001		3		0.38268		101002		3		0.70711				EM511823	
4595-EM511823					101003		3		0.92388											
4596-MPC	1		5118		4		-1.		101000		4		.0						EM511814	
4597-EM511814					101001		4		0.38268		101002		4		0.70711				EM511824	
4598-EM511824					101003		4		0.92388											
4599-MPC	1		5118		5		-1.		101000		5		.0						EM511815	
4600-EM511815					101001		5		0.38268		101002		5		0.70711				EM511825	

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CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
4601-EM511825				101003		5 0.92388					
4602-MPC	1		5118	6		-1.	101000	6	1.00000		EM511816
4603-EM511816				101001		6 0.92388	101002		6 0.70711		EM511826
4604-EM511826				101003		6 0.38268					
4605-MPC	1		5119	1		-1.	101000	1	1.00000		EM511911
4606-EM511911				101001		1 0.70711	101002		1 0.00000		EM511921
4607-EM511921				101003		1-0.70711					
4608-MPC	1		5119	2		-1.	101000	2	1.00000		EM511912
4609-EM511912				101001		2 0.70711	101002		2 0.00000		EM511922
4610-EM511922				101003		2-0.70711					
4611-MPC	1		5119	3		-1.	101000	3	.0		EM511913
4612-EM511913				101001		3 0.70711	101002		3 1.00000		EM511923
4613-EM511923				101003		3 0.70711					
4614-MPC	1		5119	4		-1.	101000	4	.0		EM511914
4615-EM511914				101001		4 0.70711	101002		4 1.00000		EM511924
4616-EM511924				101003		4 0.70711					
4617-MPC	1		5119	5		-1.	101000	5	.0		EM511915
4618-EM511915				101001		5 0.70711	101002		5 1.00000		EM511925
4619-EM511925				101003		5 0.70711					
4620-MPC	1		5119	6		-1.	101000	6	1.00000		EM511916
4621-EM511916				101001		6 0.70711	101002		6 0.00000		EM511926
4622-EM511926				101003		6-0.70711					
4623-MPC	1		5120	1		-1.	101000	1	1.00000		EM512011
4624-EM512011				101001		1 0.38268	101002		1-0.70711		EM512021
4625-EM512021				101003		1-0.92388					
4626-MPC	1		5120	2		-1.	101000	2	1.00000		EM512012
4627-EM512012				101001		2 0.38268	101002		2-0.70711		EM512022
4628-EM512022				101003		2-0.92388					
4629-MPC	1		5120	3		-1.	101000	3	.0		EM512013
4630-EM512013				101001		3 0.92388	101002		3 0.70711		EM512023
4631-EM512023				101003		3-0.38268					
4632-MPC	1		5120	4		-1.	101000	4	.0		EM512014
4633-EM512014				101001		4 0.92388	101002		4 0.70711		EM512024
4634-EM512024				101003		4-0.38268					
4635-MPC	1		5120	5		-1.	101000	5	.0		EM512015
4636-EM512015				101001		5 0.92388	101002		5 0.70711		EM512025
4637-EM512025				101003		5-0.38268					
4638-MPC	1		5120	6		-1.	101000	6	1.00000		EM512016
4639-EM512016				101001		6 0.38268	101002		6-0.70711		EM512026
4640-EM512026				101003		6-0.92388					
4641-MPC	1		5121	1		-1.	101000	1	1.00000		EM512111
4642-EM512111				101001		1 0.00000	101002		1-1.00000		EM512121
4643-EM512121				101003		1-0.00000					
4644-MPC	1		5121	2		-1.	101000	2	1.00000		EM512112
4645-EM512112				101001		2 0.00000	101002		2-1.00000		EM512122
4646-EM512122				101003		2-0.00000					
4647-MPC	1		5121	3		-1.	101000	3	.0		EM512113
4648-EM512113				101001		3 1.00000	101002		3 0.00000		EM512123
4649-EM512123				101003		3-1.00000					
4650-MPC	1		5121	4		-1.	101000	4	.0		EM512114

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
4651-EM512114						101001		4	1.00000		101002		4	0.00000						EM512124	
4652-EM512124						101003		4	-1.00000												
4653-MPC	1			5121		5		-1.		101000	5		.0							EM512115	
4654-EM512115						101001		5	1.00000		101002		5	0.00000						EM512125	
4655-EM512125						101003		5	-1.00000												
4656-MPC	1			5121		6		-1.		101000	6		1.00000							EM512116	
4657-EM512116						101001		6	0.00000		101002		6	-1.00000						EM512126	
4658-EM512126						101003		6	-0.00000												
4659-MPC	1			5122		1		-1.		101000	1		1.00000							EM512211	
4660-EM512211						101001		1	-0.38268		101002		1	-0.70711						EM512221	
4661-EM512221						101003		1	0.92388												
4662-MPC	1			5122		2		-1.		101000	2		1.00000							EM512212	
4663-EM512212						101001		2	-0.38268		101002		2	-0.70711						EM512222	
4664-EM512222						101003		2	0.92388												
4665-MPC	1			5122		3		-1.		101000	3		.0							EM512213	
4666-EM512213						101001		3	0.92388		101002		3	-0.70711						EM512223	
4667-EM512223						101003		3	-0.38269												
4668-MPC	1			5122		4		-1.		101000	4		.0							EM512214	
4669-EM512214						101001		4	0.92388		101002		4	-0.70711						EM512224	
4670-EM512224						101003		4	-0.38269												
4671-MPC	1			5122		5		-1.		101000	5		.0							EM512215	
4672-EM512215						101001		5	0.92388		101002		5	-0.70711						EM512225	
4673-EM512225						101003		5	-0.38269												
4674-MPC	1			5122		6		-1.		101000	6		1.00000							EM512216	
4675-EM512216						101001		6	-0.38268		101002		6	-0.70711						EM512226	
4676-EM512226						101003		6	0.92388												
4677-MPC	1			5123		1		-1.		101000	1		1.00000							EM512311	
4678-EM512311						101001		1	-0.70711		101002		1	-0.00000						EM512321	
4679-EM512321						101003		1	0.70711												
4680-MPC	1			5123		2		-1.		101000	2		1.00000							EM512312	
4681-EM512312						101001		2	-0.70711		101002		2	-0.00000						EM512322	
4682-EM512322						101003		2	0.70711												
4683-MPC	1			5123		3		-1.		101000	3		.0							EM512313	
4684-EM512313						101001		3	0.70711		101002		3	-1.00000						EM512323	
4685-EM512323						101003		3	0.70710												
4686-MPC	1			5123		4		-1.		101000	4		.0							EM512314	
4687-EM512314						101001		4	0.70711		101002		4	-1.00000						EM512324	
4688-EM512324						101003		4	0.70710												
4689-MPC	1			5123		5		-1.		101000	5		.0							EM512315	
4690-EM512315						101001		5	0.70711		101002		5	-1.00000						EM512325	
4691-EM512325						101003		5	0.70710												
4692-MPC	1			5123		6		-1.		101000	6		1.00000							EM512316	
4693-EM512316						101001		6	-0.70711		101002		6	-0.00000						EM512326	
4694-EM512326						101003		6	0.70711												
4695-MPC	1			5124		1		-1.		101000	1		1.00000							EM512411	
4696-EM512411						101001		1	-0.92388		101002		1	0.70711						EM512421	
4697-EM512421						101003		1	-0.38268												
4698-MPC	1			5124		2		-1.		101000	2		1.00000							EM512412	
4699-EM512412						101001		2	-0.92388		101002		2	0.70711						EM512422	
4700-EM512422						101003		2	-0.38268												

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
4701-MPC	1	5124	3	-1.	101000	3	.0				
4702-EMS12413		101001		3	0.38268	101002	3-0.70711			EMS12413	
4703-EMS12423		101003		3	0.92388					EMS12423	
4704-MPC	1	5124	4	-1.	101000	4	.0				
4705-EMS12414		101001		4	0.38268	101002	4-0.70711			EMS12414	
4706-EMS12424		101003		4	0.92388					EMS12424	
4707-MPC	1	5124	5	-1.	101000	5	.0				
4708-EMS12415		101001		5	0.38268	101002	5-0.70711			EMS12415	
4709-EMS12425		101003		5	0.92388					EMS12425	
4710-MPC	1	5124	6	-1.	101000	6	1.00000				
4711-EMS12416		101001		6	0.92388	101002	6-0.70711			EMS12416	
4712-EMS12426		101003		6	0.38268					EMS12426	
4713-MPC	1	5125	1	-1.	101000	1	1.00000				
4714-EMS12511		101001		1	1.00000	101002	1-1.00000			EMS12511	
4715-EMS12521		101003		1	1.00000					EMS12521	
4716-MPC	1	5125	2	-1.	101000	2	1.00000				
4717-EMS12512		101001		2	1.00000	101002	2-1.00000			EMS12512	
4718-EMS12522		101003		2	1.00000					EMS12522	
4719-MPC	1	5125	3	-1.	101000	3	.0				
4720-EMS12513		101001		3	0.00000	101002	3-0.00000			EMS12513	
4721-EMS12523		101003		3	0.00000					EMS12523	
4722-MPC	1	5125	4	-1.	101000	4	.0				
4723-EMS12514		101001		4	0.00000	101002	4-0.00000			EMS12514	
4724-EMS12524		101003		4	0.00000					EMS12524	
4725-MPC	1	5125	5	-1.	101000	5	.0				
4726-EMS12515		101001		5	0.00000	101002	5-0.00000			EMS12515	
4727-EMS12525		101003		5	0.00000					EMS12525	
4728-MPC	1	5125	6	-1.	101000	6	1.00000				
4729-EMS12516		101001		6	1.00000	101002	6-1.00000			EMS12516	
4730-EMS12526		101003		6	1.00000					EMS12526	
4731-MPC	1	5126	1	-1.	101000	1	1.00000				
4732-EMS12611		101001		1	0.19732	101002	1-0.92213			EMS12611	
4733-EMS12621		101003		1	0.56122					EMS12621	
4734-MPC	1	5126	2	-1.	101000	2	1.00000				
4735-EMS12612		101001		2	0.19732	101002	2-0.92213			EMS12612	
4736-EMS12622		101003		2	0.56122					EMS12622	
4737-MPC	1	5126	3	-1.	101000	3	.0				
4738-EMS12613		101001		3	0.98034	101002	3-0.38687			EMS12613	
4739-EMS12623		101003		3	0.82767					EMS12623	
4740-MPC	1	5126	4	-1.	101000	4	.0				
4741-EMS12614		101001		4	0.98034	101002	4-0.38687			EMS12614	
4742-EMS12624		101003		4	0.82767					EMS12624	
4743-MPC	1	5126	5	-1.	101000	5	.0				
4744-EMS12615		101001		5	0.98034	101002	5-0.38687			EMS12615	
4745-EMS12625		101003		5	0.82767					EMS12625	
4746-MPC	1	5126	6	-1.	101000	6	1.00000				
4747-EMS12616		101001		6	0.19732	101002	6-0.92213			EMS12616	
4748-EMS12626		101003		6	0.56122					EMS12626	
4749-MPC	1	5130	1	-1.	101100	1	1.00000				
4750-EMS13011		101101		1	1.00000	101102	1-1.00000			EMS13011	

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
CGUNT.	1	..	2	..	3	..	4	..	5	..
4751-EM513021			101103		1	1.00000				
4752-MPC	1		5130	2	-1.	101100	2	1.00000		EM513012
4753-EM513012			101101		2	1.00000	101102	2	1.00000	EM513022
4754-EM513022			101103		2	1.00000				
4755-MPC	1		5130	3	-1.	101100	3	.0		EM513013
4756-EM513013			101101		3	0.0	101102	3	0.0	EM513023
4757-EM513023			101103		3	0.0				
4758-MPC	1		5130	4	-1.	101100	4	.0		EM513014
4759-EM513014			101101		4	0.0	101102	4	0.0	EM513024
4760-EM513024			101103		4	0.0				
4761-MPC	1		5130	5	-1.	101100	5	.0		EM513015
4762-EM513015			101101		5	0.0	101102	5	0.0	EM513025
4763-EM513025			101103		5	0.0				
4764-MPC	1		5130	6	-1.	101100	6	1.00000		EM513016
4765-EM513016			101101		6	1.00000	101102	6	1.00000	EM513026
4766-EM513026			101103		6	1.00000				
4767-MPC	1		5131	1	-1.	101100	1	1.00000		EM513111
4768-EM513111			101101		1	0.92388	101102	1	0.70711	EM513121
4769-EM513121			101103		1	0.38268				
4770-MPC	1		5131	2	-1.	101100	2	1.00000		EM513112
4771-EM513112			101101		2	0.92388	101102	2	0.70711	EM513122
4772-EM513122			101103		2	0.38268				
4773-MPC	1		5131	3	-1.	101100	3	.0		EM513113
4774-EM513113			101101		3	0.38268	101102	3	0.70711	EM513123
4775-EM513123			101103		3	0.92388				
4776-MPC	1		5131	4	-1.	101100	4	.0		EM513114
4777-EM513114			101101		4	0.38268	101102	4	0.70711	EM513124
4778-EM513124			101103		4	0.92388				
4779-MPC	1		5131	5	-1.	101100	5	.0		EM513115
4780-EM513115			101101		5	0.38268	101102	5	0.70711	EM513125
4781-EM513125			101103		5	0.92388				
4782-MPC	1		5131	6	-1.	101100	6	1.00000		EM513116
4783-EM513116			101101		6	0.92388	101102	6	0.70711	EM513126
4784-EM513126			101103		6	0.38268				
4785-MPC	1		5132	1	-1.	101100	1	1.00000		EM513211
4786-EM513211			101101		1	0.70711	101102	1	0.00000	EM513221
4787-EM513221			101103		1	0.70711				
4788-MPC	1		5132	2	-1.	101100	2	1.00000		EM513212
4789-EM513212			101101		2	0.70711	101102	2	0.00000	EM513222
4790-EM513222			101103		2	0.70711				
4791-MPC	1		5132	3	-1.	101100	3	.0		EM513213
4792-EM513213			101101		3	0.70711	101102	3	1.00000	EM513223
4793-EM513223			101103		3	0.70711				
4794-MPC	1		5132	4	-1.	101100	4	.0		EM513214
4795-EM513214			101101		4	0.70711	101102	4	1.00000	EM513224
4796-EM513224			101103		4	0.70711				
4797-MPC	1		5132	5	-1.	101100	5	.0		EM513215
4798-EM513215			101101		5	0.70711	101102	5	1.00000	EM513225
4799-EM513225			101103		5	0.70711				
4800-MPC	1		5132	6	-1.	101100	6	1.00000		EM513216

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
4801-EM513216			101101		6	0.70711	101102		6	0.00000
4802-EM513226			101103		6	-0.70711				EM513226
4803-MPC	1		5133	1	-1.	101100	1		1.00000	EM513311
4804-EM513311			101101		1	0.38268	101102		1	-0.70711
4805-EM513321			101103		1	-0.92388				EM513321
4806-MPC	1		5133	2	-1.	101100	2		1.00000	EM513312
4807-EM513312			101101		2	0.38268	101102		2	-0.70711
4808-EM513322			101103		2	-0.92388				EM513322
4809-MPC	1		5133	3	-1.	101100	3		.0	EM513313
4810-EM513313			101101		3	0.92388	101102		3	0.70711
4811-EM513323			101103		3	-0.38268				EM513323
4812-MPC	1		5133	4	-1.	101100	4		.0	EM513314
4813-EM513314			101101		4	0.92388	101102		4	0.70711
4814-EM513324			101103		4	-0.38268				EM513324
4815-MPC	1		5133	5	-1.	101100	5		.0	EM513315
4816-EM513315			101101		5	0.92388	101102		5	0.70711
4817-EM513325			101103		5	-0.38268				EM513325
4818-MPC	1		5133	6	-1.	101100	6		1.00000	EM513316
4819-EM513316			101101		6	0.38268	101102		6	-0.70711
4820-EM513326			101103		6	-0.92388				EM513326
4821-MPC	1		5134	1	-1.	101100	1		1.00000	EM513411
4822-EM513411			101101		1	0.00000	101102		1	-1.00000
4823-EM513421			101103		1	-0.00000				EM513421
4824-MPC	1		5134	2	-1.	101100	2		1.00000	EM513412
4825-EM513412			101101		2	0.00000	101102		2	-1.00000
4826-EM513422			101103		2	-0.00000				EM513422
4827-MPC	1		5134	3	-1.	101100	3		.0	EM513413
4828-EM513413			101101		3	1.00000	101102		3	0.00000
4829-EM513423			101103		3	-1.00000				EM513423
4830-MPC	1		5134	4	-1.	101100	4		.0	EM513414
4831-EM513414			101101		4	1.00000	101102		4	0.00000
4832-EM513424			101103		4	-1.00000				EM513424
4833-MPC	1		5134	5	-1.	101100	5		.0	EM513415
4834-EM513415			101101		5	1.00000	101102		5	0.00000
4835-EM513425			101103		5	-1.00000				EM513425
4836-MPC	1		5134	6	-1.	101100	6		1.00000	EM513416
4837-EM513416			101101		6	0.00000	101102		6	-1.00000
4838-EM513426			101103		6	-0.00000				EM513426
4839-MPC	1		5135	1	-1.	101100	1		1.00000	EM513511
4840-EM513511			101101		1	-0.38268	101102		1	-0.70711
4841-EM513521			101103		1	0.92388				EM513521
4842-MPC	1		5135	2	-1.	101100	2		1.00000	EM513512
4843-EM513512			101101		2	-0.38268	101102		2	-0.70711
4844-EM513522			101103		2	0.92388				EM513522
4845-MPC	1		5135	3	-1.	101100	3		.0	EM513513
4846-EM513513			101101		3	0.92388	101102		3	-0.70711
4847-EM513523			101103		3	-0.38269				EM513523
4848-MPC	1		5135	4	-1.	101100	4		.0	EM513514
4849-EM513514			101101		4	0.92388	101102		4	-0.70711
4850-EM513524			101103		4	-0.38269				EM513524



SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
4851-MPC	1	5135	5	-1.	101100	5	.0			EMS13515
4852-EMS13515		101101		5	0.92388	101102	5-0.70711			EMS13525
4853-EMS13525		101103		5	0.38269					
4854-MPC	1	5135	6	-1.	101100	6	1.00000			EMS13516
4855-EMS13516		101101		6	0.38268	101102	6-0.70711			EMS13526
4856-EMS13526		101103		6	0.92388					
4857-MPC	1	5135	1	-1.	101100	1	1.00000			EMS13611
4858-EMS13611		101101		1	0.70711	101102	1-0.00000			EMS13621
4859-EMS13621		101103		1	0.70711					
4860-MPC	1	5136	2	-1.	101100	2	1.00000			EMS13612
4861-EMS13612		101101		2	0.70711	101102	2-0.00000			EMS13622
4862-EMS13622		101103		2	0.70711					
4863-MPC	1	5136	3	-1.	101100	3	.0			EMS13613
4864-EMS13613		101101		3	0.70711	101102	3-1.00000			EMS13623
4865-EMS13623		101103		3	0.70710					
4866-MPC	1	5136	4	-1.	101100	4	.0			EMS13614
4867-EMS13614		101101		4	0.70711	101102	4-1.00000			EMS13624
4868-EMS13624		101103		4	0.70710					
4869-MPC	1	5136	5	-1.	101100	5	.0			EMS13615
4870-EMS13615		101101		5	0.70711	101102	5-1.00000			EMS13625
4871-EMS13625		101103		5	0.70710					
4872-MPC	1	5136	6	-1.	101100	6	1.00000			EMS13616
4873-EMS13616		101101		6	0.70711	101102	6-0.00000			EMS13626
4874-EMS13626		101103		6	0.70711					
4875-MPC	1	5137	1	-1.	101100	1	1.00000			EMS13711
4876-EMS13711		101101		1	0.92388	101102	1 0.70711			EMS13721
4877-EMS13721		101103		1	0.38268					
4878-MPC	1	5137	2	-1.	101100	2	1.00000			EMS13712
4879-EMS13712		101101		2	0.92388	101102	2 0.70711			EMS13722
4880-EMS13722		101103		2	0.38268					
4881-MPC	1	5137	3	-1.	101100	3	.0			EMS13713
4882-EMS13713		101101		3	0.38268	101102	3-0.70711			EMS13723
4883-EMS13723		101103		3	0.92388					
4884-MPC	1	5137	4	-1.	101100	4	.0			EMS13714
4885-EMS13714		101101		4	0.38268	101102	4-0.70711			EMS13724
4886-EMS13724		101103		4	0.92388					
4887-MPC	1	5137	5	-1.	101100	5	.0			EMS13715
4888-EMS13715		101101		5	0.38268	101102	5-0.70711			EMS13725
4889-EMS13725		101103		5	0.92388					
4890-MPC	1	5137	6	-1.	101100	6	1.00000			EMS13716
4891-EMS13716		101101		6	0.92388	101102	6 0.70711			EMS13726
4892-EMS13726		101103		6	0.38268					
4893-MPC	1	5138	1	-1.	101100	1	1.00000			EMS13811
4894-EMS13811		101101		1	1.00000	101102	1 1.00000			EMS13821
4895-EMS13821		101103		1	1.00000					
4896-MPC	1	5138	2	-1.	101100	2	1.00000			EMS13812
4897-EMS13812		101101		2	1.00000	101102	2 1.00000			EMS13822
4898-EMS13822		101103		2	1.00000					
4899-MPC	1	5138	3	-1.	101100	3	.0			EMS13813
4900-EMS13813		101101		3	0.00000	101102	3-0.00000			EMS13823

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

JULY 19, 1974 NASTRAN 5/13/72

SORTED BULK DATA ECHO										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
4901-EMS13823			101103		3 0.00000					
4902-MPC	1	5138	4		-1.	101100	4	.0		EMS13814
4903-EMS13814			101101		4 0.00000	101102		4-0.00000		EMS13824
4904-EMS13824			101103		4 0.00000					
4905-MPC	1	5138	5		-1.	101100	5	.0		EMS13815
4906-EMS13815			101101		5 0.00000	101102		5-0.00000		EMS13825
4907-EMS13825			101103		5 0.00000					
4909-MPC	1	5138	6		-1.	101100	6	1.00000		EMS13816
4909-EMS13816			101101		6-1.00000	101102		6 1.00000		EMS13826
4910-EMS13826			101103		6-1.00000					
4911-MPC	1	5143	1		-1.	101200	1	1.00000		EMS14311
4912-EMS14311			101201		1 1.00000	101202		1 1.00000		EMS14321
4913-EMS14321			101203		1 1.00000					
4914-MPC	1	5143	2		-1.	101200	2	1.00000		EMS14312
4915-EMS14312			101201		2 1.00000	101202		2 1.00000		EMS14322
4915-EMS14322			101203		2 1.00000					
4917-MPC	1	5143	3		-1.	101200	3	.0		EMS14313
4918-EMS14313			101201		3 0.0	101202		3 0.0		EMS14323
4919-EMS14323			101203		3 0.0					
4920-MPC	1	5143	4		-1.	101200	4	.0		EMS14314
4921-EMS14314			101201		4 0.0	101202		4 0.0		EMS14324
4922-EMS14324			101203		4 0.0					
4923-MPC	1	5143	5		-1.	101200	5	.0		EMS14315
4924-EMS14315			101201		5 0.0	101202		5 0.0		EMS14325
4925-EMS14325			101203		5 0.0					
4926-MPC	1	5143	6		-1.	101200	6	1.00000		EMS14316
4927-EMS14316			101201		6 1.00000	101202		6 1.00000		EMS14326
4928-EMS14326			101203		6 1.00000					
4929-MPC	1	5144	1		-1.	101200	1	1.00000		EMS14411
4930-EMS14411			101201		1 0.92388	101202		1 0.70711		EMS14421
4931-EMS14421			101203		1 0.38268					
4932-MPC	1	5144	2		-1.	101200	2	1.00000		EMS14412
4933-EMS14412			101201		2 0.92388	101202		2 0.70711		EMS14422
4934-EMS14422			101203		2 0.38268					
4935-MPC	1	5144	3		-1.	101200	3	.0		EMS14413
4936-EMS14413			101201		3 0.38268	101202		3 0.70711		EMS14423
4937-EMS14423			101203		3 0.92388					
4938-MPC	1	5144	4		-1.	101200	4	.0		EMS14414
4939-EMS14414			101201		4 0.38268	101202		4 0.70711		EMS14424
4940-EMS14424			101203		4 0.92388					
4941-MPC	1	5144	5		-1.	101200	5	.0		EMS14415
4942-EMS14415			101201		5 0.38268	101202		5 0.70711		EMS14425
4943-EMS14425			101203		5 0.92388					
4944-MPC	1	5144	6		-1.	101200	6	1.00000		EMS14416
4945-EMS14416			101201		6 0.92388	101202		6 0.70711		EMS14426
4945-EMS14426			101203		6 0.38268					
4947-MPC	1	5145	1		-1.	101200	1	1.00000		EMS14511
4948-EMS14511			101201		1 0.70711	101202		1 0.00000		EMS14521
4949-EMS14521			101203		1-0.70711					
4950-MPC	1	5145	2		-1.	101200	2	1.00000		EMS14512

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
4951-EMS14512			101201		2 0.70711	101202		2 0.00000		EMS14522
4952-EMS14522			101203		2-0.70711					
4953-MPC	1	5145	3		-1.	101200 3		.0		EMS14513
4954-EMS14513			101201		3 0.70711	101202		3 1.00000		EMS14523
4955-EMS14523			101203		3 0.70711					
4956-MPC	1	5145	4		-1.	101200 4		.0		EMS14514
4957-EMS14514			101201		4 0.70711	101202		4 1.00000		EMS14524
4958-EMS14524			101203		4 0.70711					
4959-MPC	1	5145	5		-1.	101200 5		.0		EMS14515
4960-EMS14515			101201		5 0.70711	101202		5 1.00000		EMS14525
4961-EMS14525			101203		5 0.70711					
4962-MPC	1	5145	6		-1.	101200 6		1.00000		EMS14516
4963-EMS14516			101201		6 0.70711	101202		6 0.00000		EMS14526
4964-EMS14526			101203		6-0.70711					
4965-MPC	1	5146	1		-1.	101200 1		1.00000		EMS14611
4966-EMS14611			101201		1 0.38268	101202		1-0.70711		EMS14621
4967-EMS14621			101203		1-0.92388					
4968-MPC	1	5146	2		-1.	101200 2		1.00000		EMS14612
4969-EMS14612			101201		2 0.38268	101202		2-0.70711		EMS14622
4970-EMS14622			101203		2-0.92388					
4971-MPC	1	5146	3		-1.	101200 3		.0		EMS14613
4972-EMS14613			101201		3 0.92388	101202		3 0.70711		EMS14623
4973-EMS14623			101203		3-0.38268					
4974-MPC	1	5146	4		-1.	101200 4		.0		EMS14614
4975-EMS14614			101201		4 0.92388	101202		4 0.70711		EMS14624
4976-EMS14624			101203		4-0.38268					
4977-MPC	1	5146	5		-1.	101200 5		.0		EMS14615
4978-EMS14615			101201		5 0.92388	101202		5 0.70711		EMS14625
4979-EMS14625			101203		5-0.38268					
4980-MPC	1	5146	6		-1.	101200 6		1.00000		EMS14616
4981-EMS14616			101201		6 0.38268	101202		6-0.70711		EMS14626
4982-EMS14626			101203		6-0.92388					
4983-MPC	1	5147	1		-1.	101200 1		1.00000		EMS14711
4984-EMS14711			101201		1 0.00000	101202		1-1.00000		EMS14721
4985-EMS14721			101203		1-0.00000					
4986-MPC	1	5147	2		-1.	101200 2		1.00000		EMS14712
4987-EMS14712			101201		2 0.00000	101202		2-1.00000		EMS14722
4988-EMS14722			101203		2-0.00000					
4989-MPC	1	5147	3		-1.	101200 3		.0		EMS14713
4990-EMS14713			101201		3 1.00000	101202		3 0.00000		EMS14723
4991-EMS14723			101203		3-1.00000					
4992-MPC	1	5147	4		-1.	101200 4		.0		EMS14714
4993-EMS14714			101201		4 1.00000	101202		4 0.00000		EMS14724
4994-EMS14724			101203		4-1.00000					
4995-MPC	1	5147	5		-1.	101200 5		.0		EMS14715
4996-EMS14715			101201		5 1.00000	101202		5 0.00000		EMS14725
4997-EMS14725			101203		5-1.00000					
4998-MPC	1	5147	6		-1.	101200 6		1.00000		EMS14716
4999-EMS14716			101201		6 0.00000	101202		6-1.00000		EMS14726
5000-EMS14726			101203		6-0.00000					

S O R T E D B U L K D A T A E C H O

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5001-MPC	1			5148		1		-1.		101200		1		1.00000						EM514811	
5002-EM514811				101201				1-0.38268		101202				1-0.70711						EM514821	
5003-EM514821				101203				1 0.92388													
5004-MPC	1			5148		2		-1.		101200		2		1.00000						EM514812	
5005-EM514812				101201				2-0.38268		101202				2-0.70711						EM514822	
5006-EM514822				101203				2 0.92388													
5007-MPC	1			5148		3		-1.		101200		3		.0						EM514813	
5008-EM514813				101201				3 0.92388		101202				3-0.70711						EM514823	
5009-EM514823				101203				3-0.38269													
5010-MPC	1			5148		4		-1.		101200		4		.0						EM514814	
5011-EM514814				101201				4 0.92388		101202				4-0.70711						EM514824	
5012-EM514824				101203				4-0.38269													
5013-MPC	1			5148		5		-1.		101200		5		.0						EM514815	
5014-EM514815				101201				5 0.92388		101202				5-0.70711						EM514825	
5015-EM514825				101203				5-0.38269													
5016-MPC	1			5148		6		-1.		101200		6		1.00000						EM514816	
5017-EM514816				101201				6-0.38268		101202				6-0.70711						EM514826	
5018-EM514826				101203				6 0.92388													
5019-MPC	1			5149		1		-1.		101200		1		1.00000						EM514911	
5020-EM514911				101201				1-0.70711		101202				1-0.00000						EM514921	
5021-EM514921				101203				1 0.70711													
5022-MPC	1			5149		2		-1.		101200		2		1.00000						EM514912	
5023-EM514912				101201				2-0.70711		101202				2-0.00000						EM514922	
5024-EM514922				101203				2 0.70711													
5025-MPC	1			5149		3		-1.		101200		3		.0						EM514913	
5026-EM514913				101201				3 0.70711		101202				3-1.00000						EM514923	
5027-EM514923				101203				3 0.70710													
5028-MPC	1			5149		4		-1.		101200		4		.0						EM514914	
5029-EM514914				101201				4 0.70711		101202				4-1.00000						EM514924	
5030-EM514924				101203				4 0.70710													
5031-MPC	1			5149		5		-1.		101200		5		.0						EM514915	
5032-EM514915				101201				5 0.70711		101202				5-1.00000						EM514925	
5033-EM514925				101203				5 0.70710													
5034-MPC	1			5149		6		-1.		101200		6		1.00000						EM514916	
5035-EM514916				101201				6-0.70711		101202				6-0.00000						EM514926	
5036-EM514926				101203				6 0.70711													
5037-MPC	1			5150		1		-1.		101200		1		1.00000						EM515011	
5038-EM515011				101201				1-0.92388		101202				1 0.70711						EM515021	
5039-EM515021				101203				1-0.38268													
5040-MPC	1			5150		2		-1.		101200		2		1.00000						EM515012	
5041-EM515012				101201				2-0.92388		101202				2 0.70711						EM515022	
5042-EM515022				101203				2-0.38268													
5043-MPC	1			5150		3		-1.		101200		3		.0						EM515013	
5044-EM515013				101201				3 0.38268		101202				3-0.70711						EM515023	
5045-EM515023				101203				3 0.92388													
5046-MPC	1			5150		4		-1.		101200		4		.0						EM515014	
5047-EM515014				101201				4 0.38268		101202				4-0.70711						EM515024	
5048-EM515024				101203				4 0.92388													
5049-MPC	1			5150		5		-1.		101200		5		.0						EM515015	
5050-EM515015				101201				5 0.38268		101202				5-0.70711						EM515025	

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5051-EM515025						101203				5	0.92388										
5052-MPC	1			5150		6				-1.		101200	6			1.00000				EM515016	
5053-EM515016						101201				6-0.92388		101202				6	0.70711			EM515026	
5054-EM515026						101203				6-0.38268											
5055-MPC	1			5151		1				-1.		101200	1			1.00000				EM515111	
5056-EM515111						101201				1-1.00000		101202				1	1.00000			EM515121	
5057-EM515121						101203				1-1.00000											
5058-MPC	1			5151		2				-1.		101200	2			1.00000				EM515112	
5059-EM515112						101201				2-1.00000		101202				2	1.00000			EM515122	
5060-EM515122						101203				2-1.00000											
5061-MPC	1			5151		3				-1.		101200	3			.0				EM515113	
5062-EM515113						101201				3	0.00000	101202				3-0.00000				EM515123	
5063-EM515123						101203				3	0.00000										
5064-MPC	1			5151		4				-1.		101200	4			.0				EM515114	
5065-EM515114						101201				4	0.00000	101202				4-0.00000				EM515124	
5066-EM515124						101203				4	0.00000										
5067-MPC	1			5151		5				-1.		101200	5			.0				EM515115	
5068-EM515115						101201				5	0.00000	101202				5-0.00000				EM515125	
5069-EM515125						101203				5	0.00000										
5070-MPC	1			5151		6				-1.		101200	6			1.00000				EM515116	
5071-EM515116						101201				6-1.00000		101202				6	1.00000			EM515126	
5072-EM515126						101203				6-1.00000											
5073-MPC	1			5156		1				-1.		101300	1			1.00000				EM515611	
5074-EM515611						101301				1	1.00000	101302				1	1.00000			EM515621	
5075-EM515621						101303				1	1.00000										
5076-MPC	1			5156		2				-1.		101300	2			1.00000				EM515612	
5077-EM515612						101301				2	1.00000	101302				2	1.00000			EM515622	
5078-EM515622						101303				2	1.00000										
5079-MPC	1			5156		3				-1.		101300	3			.0				EM515613	
5080-EM515613						101301				3	0.0	101302				3	0.0			EM515623	
5081-EM515623						101303				3	0.0										
5082-MPC	1			5156		4				-1.		101300	4			.0				EM515614	
5083-EM515614						101301				4	0.0	101302				4	0.0			EM515624	
5084-EM515624						101303				4	0.0										
5085-MPC	1			5156		5				-1.		101300	5			.0				EM515615	
5086-EM515615						101301				5	0.0	101302				5	0.0			EM515625	
5087-EM515625						101303				5	0.0										
5088-MPC	1			5156		6				-1.		101300	6			1.00000				EM515616	
5089-EM515616						101301				6	1.00000	101302				6	1.00000			EM515626	
5090-EM515626						101303				6	1.00000										
5091-MPC	1			5157		1				-1.		101300	1			1.00000				EM515711	
5092-EM515711						101301				1	0.92388	101302				1	0.70711			EM515721	
5093-EM515721						101303				1	0.38268										
5094-MPC	1			5157		2				-1.		101300	2			1.00000				EM515712	
5095-EM515712						101301				2	0.92388	101302				2	0.70711			EM515722	
5096-EM515722						101303				2	0.38268										
5097-MPC	1			5157		3				-1.		101300	3			.0				EM515713	
5098-EM515713						101301				3	0.38268	101302				3	0.70711			EM515723	
5099-EM515723						101303				3	0.92388										
5100-MPC	1			5157		4				-1.		101300	4			.0				EM515714	

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CARD	1	2	3	4	5	6	7	8	9	10
5101-EM515714	101301	4	0.38268	101302	4	0.70711			EM515724	
5102-EM515724	101303	4	0.92388							
5103-MPC	5157	5	-1.	101300	5	.0			EM515715	
5104-EM515715	101301	5	0.38268	101302	5	0.70711			EM515725	
5105-EM515725	101303	5	0.92388							
5106-MPC	5157	6	-1.	101300	6	1.00000			EM515716	
5107-EM515716	101301	6	0.92388	101302	6	0.70711			EM515726	
5108-EM515726	101303	6	0.38268							
5109-MPC	5158	1	-1.	101300	1	1.00000			EM515811	
5110-EM515811	101301	1	0.70711	101302	1	0.00000			EM515821	
5111-EM515821	101303	1	-0.70711							
5112-MPC	5158	2	-1.	101300	2	1.00000			EM515812	
5113-EM515812	101301	2	0.70711	101302	2	0.00000			EM515822	
5114-EM515822	101303	2	-0.70711							
5115-MPC	5158	3	-1.	101300	3	.0			EM515813	
5116-EM515813	101301	3	0.70711	101302	3	1.00000			EM515823	
5117-EM515823	101303	3	0.70711							
5118-MPC	5158	4	-1.	101300	4	.0			EM515814	
5119-EM515814	101301	4	0.70711	101302	4	1.00000			EM515824	
5120-EM515824	101303	4	0.70711							
5121-MPC	5158	5	-1.	101300	5	.0			EM515815	
5122-EM515815	101301	5	0.70711	101302	5	1.00000			EM515825	
5123-EM515825	101303	5	0.70711							
5124-MPC	5158	6	-1.	101300	6	1.00000			EM515816	
5125-EM515816	101301	6	0.70711	101302	6	0.00000			EM515826	
5126-EM515826	101303	6	-0.70711							
5127-MPC	5159	1	-1.	101300	1	1.00000			EM515911	
5128-EM515911	101301	1	0.38268	101302	1	-0.70711			EM515921	
5129-EM515921	101303	1	-0.92388							
5130-MPC	5159	2	-1.	101300	2	1.00000			EM515912	
5131-EM515912	101301	2	0.38268	101302	2	-0.70711			EM515922	
5132-EM515922	101303	2	-0.92388							
5133-MPC	5159	3	-1.	101300	3	.0			EM515913	
5134-EM515913	101301	3	0.92388	101302	3	0.70711			EM515923	
5135-EM515923	101303	3	-0.38268							
5136-MPC	5159	4	-1.	101300	4	.0			EM515914	
5137-EM515914	101301	4	0.92388	101302	4	0.70711			EM515924	
5138-EM515924	101303	4	-0.38268							
5139-MPC	5159	5	-1.	101300	5	.0			EM515915	
5140-EM515915	101301	5	0.92388	101302	5	0.70711			EM515925	
5141-EM515925	101303	5	-0.38268							
5142-MPC	5159	6	-1.	101300	6	1.00000			EM515916	
5143-EM515916	101301	6	0.38268	101302	6	-0.70711			EM515926	
5144-EM515926	101303	6	-0.92388							
5145-MPC	5160	1	-1.	101300	1	1.00000			EM516011	
5146-EM516011	101301	1	0.00000	101302	1	-1.00000			EM516021	
5147-EM516021	101303	1	-0.00000							
5148-MPC	5160	2	-1.	101300	2	1.00000			EM516012	
5149-EM516012	101301	2	0.00000	101302	2	-1.00000			EM516022	
5150-EM516022	101303	2	-0.00000							

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5151-MPC	1			5160		3		-1.		101300		3		.0						64516013	
5152-6M516013				101301				3 1.00000		101302				3 0.00000						64516023	
5153-6M516023				101303				3-1.00000													
5154-MPC	1			5160		4		-1.		101300		4		.0						64516014	
5155-6M516014				101301				4 1.00000		101302				4 0.00000						64516024	
5155-6M516024				101303				4-1.00000													
5157-MPC	1			5160		5		-1.		101300		5		.0						64516015	
5158-6M516015				101301				5 1.00000		101302				5 0.00000						64516025	
5159-6M516025				101303				5-1.00000													
5160-MPC	1			5160		6		-1.		101300		6		1.00000						64516016	
5161-6M516016				101301				6 0.00000		101302				6-1.00000						64516026	
5162-6M516026				101303				6-0.00000													
5163-MPC	1			5161		1		-1.		101300		1		1.00000						64516111	
5164-6M516111				101301				1-0.38268		101302				1-0.70711						64516121	
5165-6M516121				101303				1 0.92388													
5166-MPC	1			5161		2		-1.		101300		2		1.00000						64516112	
5167-6M516112				101301				2-0.38268		101302				2-0.70711						64516122	
5168-6M516122				101303				2 0.92388													
5169-MPC	1			5161		3		-1.		101300		3		.0						64516113	
5170-6M516113				101301				3 0.92388		101302				3-0.70711						64516123	
5171-6M516123				101303				3-0.38269													
5172-MPC	1			5161		4		-1.		101300		4		.0						64516114	
5173-6M516114				101301				4 0.92388		101302				4-0.70711						64516124	
5174-6M516124				101303				4-0.38269													
5175-MPC	1			5161		5		-1.		101300		5		.0						64516115	
5176-6M516115				101301				5 0.92388		101302				5-0.70711						64516125	
5177-6M516125				101303				5-0.38269													
5178-MPC	1			5161		6		-1.		101300		6		1.00000						64516116	
5179-6M516116				101301				6-0.38268		101302				6-0.70711						64516126	
5180-6M516126				101303				6 0.92388													
5181-MPC	1			5162		1		-1.		101300		1		1.00000						64516211	
5182-6M516211				101301				1-0.70711		101302				1-0.00000						64516221	
5183-6M516221				101303				1 0.70711													
5184-MPC	1			5162		2		-1.		101300		2		1.00000						64516212	
5185-6M516212				101301				2-0.70711		101302				2-0.00000						64516222	
5186-6M516222				101303				2 0.70711													
5187-MPC	1			5162		3		-1.		101300		3		.0						64516213	
5188-6M516213				101301				3 0.70711		101302				3-1.00000						64516223	
5189-6M516223				101303				3 0.70710													
5190-MPC	1			5162		4		-1.		101300		4		.0						64516214	
5191-6M516214				101301				4 0.70711		101302				4-1.00000						64516224	
5192-6M516224				101303				4 0.70710													
5193-MPC	1			5162		5		-1.		101300		5		.0						64516215	
5194-6M516215				101301				5 0.70711		101302				5-1.00000						64516225	
5195-6M516225				101303				5 0.70710													
5196-MPC	1			5162		6		-1.		101300		6		1.00000						64516216	
5197-6M516216				101301				6-0.70711		101302				6-0.00000						64516226	
5198-6M516226				101303				6 0.70711													
5199-MPC	1			5163		1		-1.		101300		1		1.00000						64516311	
5200-6M516311				101301				1-0.92388		101302				1 0.70711						64516321	

## SORTED BULK DATA ECHO

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CARD
COUNT. 1 .. 2 .. 3 .. 4 .. 5 .. 6 .. 7 .. 8 .. 9 .. 10 .
5201-EMS16321      101303      1-0.38268
5203-MPC 1      5163 2      -1.      101300 2      1.00000      EMS16312
5203-EMS16312      101301      2-0.92388      101302      2 0.70711      EMS16322
5204-EMS16322      101303      2-0.38268
5205-MPC 1      5163 3      -1.      101300 3      .0      EMS16313
5205-EMS16313      101301      3 0.38268      101302      3-0.70711      EMS16323
5207-EMS16323      101303      3 0.92388
5209-MPC 1      5163 4      -1.      101300 4      .0      EMS16314
5209-EMS16314      101301      4 0.38268      101302      4-0.70711      EMS16324
5210-EMS16324      101303      4 0.92388
5211-MPC 1      5163 5      -1.      101300 5      .0      EMS16315
5212-EMS16315      101301      5 0.38268      101302      5-0.70711      EMS16325
5213-EMS16325      101303      5 0.92388
5214-MPC 1      5163 6      -1.      101300 6      1.00000      EMS16316
5215-EMS16316      101301      6-0.92388      101302      6 0.70711      EMS16326
5216-EMS16326      101303      6-0.38268
5217-MPC 1      5164 1      -1.      101300 1      1.00000      EMS16411
5218-EMS16411      101301      1-1.00000      101302      1 1.00000      EMS16421
5219-EMS16421      101303      1-1.00000
5220-MPC 1      5164 2      -1.      101300 2      1.00000      EMS16412
5221-EMS16412      101301      2-1.00000      101302      2 1.00000      EMS16422
5222-EMS16422      101303      2-1.00000
5223-MPC 1      5164 3      -1.      101300 3      .0      EMS16413
5224-EMS16413      101301      3 0.00000      101302      3-0.00000      EMS16423
5225-EMS16423      101303      3 0.00000
5226-MPC 1      5164 4      -1.      101300 4      .0      EMS16414
5227-EMS16414      101301      4 0.00000      101302      4-0.00000      EMS16424
5228-EMS16424      101303      4 0.00000
5229-MPC 1      5164 5      -1.      101300 5      .0      EMS16415
5230-EMS16415      101301      5 0.00000      101302      5-0.00000      EMS16425
5231-EMS16425      101303      5 0.00000
5232-MPC 1      5164 6      -1.      101300 6      1.00000      EMS16416
5233-EMS16416      101301      6-1.00000      101302      6 1.00000      EMS16426
5234-EMS16426      101303      6-1.00000
5235-MPC 1      5169 1      -1.      101400 1      1.00000      EMS16911
5236-EMS16911      101401      1 1.00000      101402      1 1.00000      EMS16921
5237-EMS16921      101403      1 1.00000
5238-MPC 1      5169 2      -1.      101400 2      1.00000      EMS16912
5239-EMS16912      101401      2 1.00000      101402      2 1.00000      EMS16922
5240-EMS16922      101403      2 1.00000
5241-MPC 1      5169 3      -1.      101400 3      .0      EMS16913
5242-EMS16913      101401      3 0.0      101402      3 0.0      EMS16923
5243-EMS16923      101403      3 0.0
5244-MPC 1      5169 4      -1.      101400 4      .0      EMS16914
5245-EMS16914      101401      4 0.0      101402      4 0.0      EMS16924
5246-EMS16924      101403      4 0.0
5247-MPC 1      5169 5      -1.      101400 5      .0      EMS16915
5248-EMS16915      101401      5 0.0      101402      5 0.0      EMS16925
5249-EMS16925      101403      5 0.0
5250-MPC 1      5169 6      -1.      101400 6      1.00000      EMS16916
```



S O R T E D B U L K D A T A E C H O

CARD

COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
5251-EMS16916			101401		6 1.00000	101402		6 1.00000		EMS16926
5252-EMS16926			101403		6 1.00000					
5253-MPC	1		5170	1	-1.	101400	1	1.00000		EMS17011
5254-EMS17011			101401		1 0.92388	101402		1 0.70711		EMS17021
5255-EMS17021			101403		1 0.38268					
5256-MPC	1		5170	2	-1.	101400	2	1.00000		EMS17012
5257-EMS17012			101401		2 0.92388	101402		2 0.70711		EMS17022
5258-EMS17022			101403		2 0.38268					
5259-MPC	1		5170	3	-1.	101400	3	.0		EMS17013
5260-EMS17013			101401		3 0.38268	101402		3 0.70711		EMS17023
5261-EMS17023			101403		3 0.92388					
5262-MPC	1		5170	4	-1.	101400	4	.0		EMS17014
5263-EMS17014			101401		4 0.38268	101402		4 0.70711		EMS17024
5264-EMS17024			101403		4 0.92388					
5265-MPC	1		5170	5	-1.	101400	5	.0		EMS17015
5266-EMS17015			101401		5 0.38268	101402		5 0.70711		EMS17025
5267-EMS17025			101403		5 0.92388					
5268-MPC	1		5170	6	-1.	101400	6	1.00000		EMS17016
5269-EMS17016			101401		6 0.92388	101402		6 0.70711		EMS17026
5270-EMS17026			101403		6 0.38268					
5271-MPC	1		5171	1	-1.	101400	1	1.00000		EMS17111
5272-EMS17111			101401		1 0.70711	101402		1 0.00000		EMS17121
5273-EMS17121			101403		1-0.70711					
5274-MPC	1		5171	2	-1.	101400	2	1.00000		EMS17112
5275-EMS17112			101401		2 0.70711	101402		2 0.00000		EMS17122
5276-EMS17122			101403		2-0.70711					
5277-MPC	1		5171	3	-1.	101400	3	.0		EMS17113
5278-EMS17113			101401		3 0.70711	101402		3 1.00000		EMS17123
5279-EMS17123			101403		3 0.70711					
5280-MPC	1		5171	4	-1.	101400	4	.0		EMS17114
5281-EMS17114			101401		4 0.70711	101402		4 1.00000		EMS17124
5282-EMS17124			101403		4 0.70711					
5283-MPC	1		5171	5	-1.	101400	5	.0		EMS17115
5284-EMS17115			101401		5 0.70711	101402		5 1.00000		EMS17125
5285-EMS17125			101403		5 0.70711					
5286-MPC	1		5171	6	-1.	101400	6	1.00000		EMS17116
5287-EMS17116			101401		6 0.70711	101402		6 0.00000		EMS17126
5288-EMS17126			101403		6-0.70711					
5289-MPC	1		5172	1	-1.	101400	1	1.00000		EMS17211
5290-EMS17211			101401		1 0.38268	101402		1-0.70711		EMS17221
5291-EMS17221			101403		1-0.92388					
5292-MPC	1		5172	2	-1.	101400	2	1.00000		EMS17212
5293-EMS17212			101401		2 0.38268	101402		2-0.70711		EMS17222
5294-EMS17222			101403		2-0.92388					
5295-MPC	1		5172	3	-1.	101400	3	.0		EMS17213
5296-EMS17213			101401		3 0.92388	101402		3 0.70711		EMS17223
5297-EMS17223			101403		3-0.38268					
5298-MPC	1		5172	4	-1.	101400	4	.0		EMS17214
5299-EMS17214			101401		4 0.92388	101402		4 0.70711		EMS17224
5300-EMS17224			101403		4-0.38268					

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5301-MPC	1			5172		5		-1.		101400		5		.0						EM517215	
5302-EM517215						101401		5	0.92388			101402		5	0.70711					EM517225	
5303-EM517225						101403		5	-0.38268												
5304-MPC	1			5172		6		-1.		101400		6		1.00000						EM517216	
5305-EM517216						101401		6	0.38268			101402		6	-0.70711					EM517226	
5306-EM517226						101403		6	-0.92388												
5307-MPC	1			5173		1		-1.		101400		1		1.00000						EM517311	
5308-EM517311						101401		1	0.00000			101402		1	-1.00000					EM517321	
5309-EM517321						101403		1	-0.00000												
5310-MPC	1			5173		2		-1.		101400		2		1.00000						EM517312	
5311-EM517312						101401		2	0.00000			101402		2	-1.00000					EM517322	
5312-EM517322						101403		2	-0.00000												
5313-MPC	1			5173		3		-1.		101400		3		.0						EM517313	
5314-EM517313						101401		3	1.00000			101402		3	0.00000					EM517323	
5315-EM517323						101403		3	-1.00000												
5316-MPC	1			5173		4		-1.		101400		4		.0						EM517314	
5317-EM517314						101401		4	1.00000			101402		4	0.00000					EM517324	
5318-EM517324						101403		4	-1.00000												
5319-MPC	1			5173		5		-1.		101400		5		.0						EM517315	
5320-EM517315						101401		5	1.00000			101402		5	0.00000					EM517325	
5321-EM517325						101403		5	-1.00000												
5322-MPC	1			5173		6		-1.		101400		6		1.00000						EM517316	
5323-EM517316						101401		6	0.00000			101402		6	-1.00000					EM517326	
5324-EM517326						101403		6	-0.00000												
5325-MPC	1			5174		1		-1.		101400		1		1.00000						EM517411	
5326-EM517411						101401		1	-0.38268			101402		1	-0.70711					EM517421	
5327-EM517421						101403		1	0.92388												
5328-MPC	1			5174		2		-1.		101400		2		1.00000						EM517412	
5329-EM517412						101401		2	-0.38268			101402		2	-0.70711					EM517422	
5330-EM517422						101403		2	0.92388												
5331-MPC	1			5174		3		-1.		101400		3		.0						EM517413	
5332-EM517413						101401		3	0.92388			101402		3	-0.70711					EM517423	
5333-EM517423						101403		3	-0.38269												
5334-MPC	1			5174		4		-1.		101400		4		.0						EM517414	
5335-EM517414						101401		4	0.92388			101402		4	-0.70711					EM517424	
5336-EM517424						101403		4	-0.38269												
5337-MPC	1			5174		5		-1.		101400		5		.0						EM517415	
5338-EM517415						101401		5	0.92388			101402		5	-0.70711					EM517425	
5339-EM517425						101403		5	-0.38269												
5340-MPC	1			5174		6		-1.		101400		6		1.00000						EM517416	
5341-EM517416						101401		6	-0.38268			101402		6	-0.70711					EM517426	
5342-EM517426						101403		6	0.92388												
5343-MPC	1			5175		1		-1.		101400		1		1.00000						EM517511	
5344-EM517511						101401		1	-0.70711			101402		1	-0.00000					EM517521	
5345-EM517521						101403		1	0.70711												
5346-MPC	1			5175		2		-1.		101400		2		1.00000						EM517512	
5347-EM517512						101401		2	-0.70711			101402		2	-0.00000					EM517522	
5348-EM517522						101403		2	0.70711												
5349-MPC	1			5175		3		-1.		101400		3		.0						EM517513	
5350-EM517513						101401		3	0.70711			101402		3	-1.00000					EM517523	

SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5351-EM517523						101403				3 0.70710											
5352-MPC	1			5175		4				-1.		101400	4			.0					EM517514
5353-EM517514						101401				4 0.70711		101402				4-1.00000					EM517524
5354-EM517524						101403				4 0.70710											
5355-MPC	1			5175		5				-1.		101400	5			.0					EM517515
5356-EM517515						101401				5 0.70711		101402				5-1.00000					EM517525
5357-EM517525						101403				5 0.70710											
5358-MPC	1			5175		6				-1.		101400	6			1.00000					EM517516
5359-EM517516						101401				6-0.70711		101402				6-0.00000					EM517526
5360-EM517526						101403				6 0.70711											
5361-MPC	1			5176		1				-1.		101400	1			1.00000					EM517611
5362-EM517611						101401				1-0.92388		101402				1 0.70711					EM517621
5363-EM517621						101403				1-0.38268											
5364-MPC	1			5176		2				-1.		101400	2			1.00000					EM517612
5365-EM517612						101401				2-0.92388		101402				2 0.70711					EM517622
5366-EM517622						101403				2-0.38268											
5367-MPC	1			5176		3				-1.		101400	3			.0					EM517613
5368-EM517613						101401				3 0.38268		101402				3-0.70711					EM517623
5369-EM517623						101403				3 0.92388											
5370-MPC	1			5176		4				-1.		101400	4			.0					EM517614
5371-EM517614						101401				4 0.38268		101402				4-0.70711					EM517624
5372-EM517624						101403				4 0.92388											
5373-MPC	1			5176		5				-1.		101400	5			.0					EM517615
5374-EM517615						101401				5 0.38268		101402				5-0.70711					EM517625
5375-EM517625						101403				5 0.92388											
5376-MPC	1			5176		6				-1.		101400	6			1.00000					EM517616
5377-EM517616						101401				6-0.92388		101402				6 0.70711					EM517626
5378-EM517626						101403				6-0.38268											
5379-MPC	1			5177		1				-1.		101400	1			1.00000					EM517711
5380-EM517711						101401				1-1.00000		101402				1 1.00000					EM517721
5381-EM517721						101403				1-1.00000											
5382-MPC	1			5177		2				-1.		101400	2			1.00000					EM517712
5383-EM517712						101401				2-1.00000		101402				2 1.00000					EM517722
5384-EM517722						101403				2-1.00000											
5385-MPC	1			5177		3				-1.		101400	3			.0					EM517713
5386-EM517713						101401				3 0.00000		101402				3-0.00000					EM517723
5387-EM517723						101403				3 0.00000											
5388-MPC	1			5177		4				-1.		101400	4			.0					EM517714
5389-EM517714						101401				4 0.00000		101402				4-0.00000					EM517724
5390-EM517724						101403				4 0.00000											
5391-MPC	1			5177		5				-1.		101400	5			.0					EM517715
5392-EM517715						101401				5 0.00000		101402				5-0.00000					EM517725
5393-EM517725						101403				5 0.00000											
5394-MPC	1			5177		6				-1.		101400	6			1.00000					EM517716
5395-EM517716						101401				6-1.00000		101402				6 1.00000					EM517726
5396-EM517726						101403				6-1.00000											
5397-MPC	1			5182		1				-1.		101500	1			1.00000					EM518211
5398-EM518211						101501				1 1.00000		101502				1 1.00000					EM518221
5399-EM518221						101503				1 1.00000											
5400-MPC	1			5182		2				-1.		101500	2			1.00000					EM518212

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

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SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
5401-EM518212						101501				2 1.00000		101502				2 1.00000				EM518222	
5402-EM518222						101503				2 1.00000											
5403-MPC	1					5182	3			-1.		101500	3			.0				EM518213	
5404-EM518213						101501				3 0.0		101502				3 0.0				EM518223	
5405-EM518223						101503				3 0.0											
5406-MPC	1					5182	4			-1.		101500	4			.0				EM518214	
5407-EM518214						101501				4 0.0		101502				4 0.0				EM518224	
5408-EM518224						101503				4 0.0											
5409-MPC	1					5182	5			-1.		101500	5			.0				EM518215	
5410-EM518215						101501				5 0.0		101502				5 0.0				EM518225	
5411-EM518225						101503				5 0.0											
5412-MPC	1					5182	6			-1.		101500	6			1.00000				EM518216	
5413-EM518216						101501				6 1.00000		101502				6 1.00000				EM518226	
5414-EM518226						101503				6 1.00000											
5415-MPC	1					5183	1			-1.		101500	1			1.00000				EM518311	
5416-EM518311						101501				1 0.92388		101502				1 0.70711				EM518321	
5417-EM518321						101503				1 0.38268											
5418-MPC	1					5183	2			-1.		101500	2			1.00000				EM518312	
5419-EM518312						101501				2 0.92388		101502				2 0.70711				EM518322	
5420-EM518322						101503				2 0.38268											
5421-MPC	1					5183	3			-1.		101500	3			.0				EM518313	
5422-EM518313						101501				3 0.38268		101502				3 0.70711				EM518323	
5423-EM518323						101503				3 0.92388											
5424-MPC	1					5183	4			-1.		101500	4			.0				EM518314	
5425-EM518314						101501				4 0.38268		101502				4 0.70711				EM518324	
5426-EM518324						101503				4 0.92388											
5427-MPC	1					5183	5			-1.		101500	5			.0				EM518315	
5428-EM518315						101501				5 0.38268		101502				5 0.70711				EM518325	
5429-EM518325						101503				5 0.92388											
5430-MPC	1					5183	6			-1.		101500	6			1.00000				EM518316	
5431-EM518316						101501				6 0.92388		101502				6 0.70711				EM518326	
5432-EM518326						101503				6 0.38268											
5433-MPC	1					5184	1			-1.		101500	1			1.00000				EM518411	
5434-EM518411						101501				1 0.70711		101502				1 0.00000				EM518421	
5435-EM518421						101503				1-0.70711											
5436-MPC	1					5184	2			-1.		101500	2			1.00000				EM518412	
5437-EM518412						101501				2 0.70711		101502				2 0.00000				EM518422	
5438-EM518422						101503				2-0.70711											
5439-MPC	1					5184	3			-1.		101500	3			.0				EM518413	
5440-EM518413						101501				3 0.70711		101502				3 1.00000				EM518423	
5441-EM518423						101503				3 0.70711											
5442-MPC	1					5184	4			-1.		101500	4			.0				EM518414	
5443-EM518414						101501				4 0.70711		101502				4 1.00000				EM518424	
5444-EM518424						101503				4 0.70711											
5445-MPC	1					5184	5			-1.		101500	5			.0				EM518415	
5446-EM518415						101501				5 0.70711		101502				5 1.00000				EM518425	
5447-EM518425						101503				5 0.70711											
5448-MPC	1					5184	6			-1.		101500	6			1.00000				EM518416	
5449-EM518416						101501				6 0.70711		101502				6 0.00000				EM518426	
5450-EM518426						101503				6-0.70711											

EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

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SORTED BULK DATA ECHO

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5451-MPC	1			5185		1		-1.		101500		1		1.00000						EM518511	
5452-EM518511				101501				1 0.38268		101502				1-0.70711						EM518521	
5453-EM518521				101503				1-0.92388													
5454-MPC	1			5185		2		-1.		101500		2		1.00000						EM518512	
5455-EM518512				101501				2 0.38268		101502				2-0.70711						EM518522	
5456-EM518522				101503				2-0.92388													
5457-MPC	1			5185		3		-1.		101500		3		.0						EM518513	
5458-EM518513				101501				3 0.92388		101502				3 0.70711						EM518523	
5459-EM518523				101503				3-0.38268													
5460-MPC	1			5185		4		-1.		101500		4		.0						EM518514	
5461-EM518514				101501				4 0.92388		101502				4 0.70711						EM518524	
5462-EM518524				101503				4-0.38268													
5463-MPC	1			5185		5		-1.		101500		5		.0						EM518515	
5464-EM518515				101501				5 0.92388		101502				5 0.70711						EM518525	
5465-EM518525				101503				5-0.38268													
5466-MPC	1			5185		6		-1.		101500		6		1.00000						EM518516	
5467-EM518516				101501				6 0.38268		101502				6-0.70711						EM518526	
5468-EM518526				101503				6-0.92388													
5469-MPC	1			5185		1		-1.		101500		1		1.00000						EM518611	
5470-EM518611				101501				1 0.00000		101502				1-1.00000						EM518621	
5471-EM518621				101503				1-0.00000													
5472-MPC	1			5185		2		-1.		101500		2		1.00000						EM518612	
5473-EM518612				101501				2 0.00000		101502				2-1.00000						EM518622	
5474-EM518622				101503				2-0.00000													
5475-MPC	1			5185		3		-1.		101500		3		.0						EM518613	
5476-EM518613				101501				3 1.00000		101502				3 0.00000						EM518623	
5477-EM518623				101503				3-1.00000													
5478-MPC	1			5185		4		-1.		101500		4		.0						EM518614	
5479-EM518614				101501				4 1.00000		101502				4 0.00000						EM518624	
5480-EM518624				101503				4-1.00000													
5481-MPC	1			5185		5		-1.		101500		5		.0						EM518615	
5482-EM518615				101501				5 1.00000		101502				5 0.00000						EM518625	
5483-EM518625				101503				5-1.00000													
5484-MPC	1			5185		6		-1.		101500		6		1.00000						EM518616	
5485-EM518616				101501				6 0.00000		101502				6-1.00000						EM518626	
5486-EM518626				101503				6-0.00000													
5487-MPC	1			5187		1		-1.		101500		1		1.00000						EM518711	
5488-EM518711				101501				1-0.38268		101502				1-0.70711						EM518721	
5489-EM518721				101503				1 0.92388													
5490-MPC	1			5187		2		-1.		101500		2		1.00000						EM518712	
5491-EM518712				101501				2-0.38268		101502				2-0.70711						EM518722	
5492-EM518722				101503				2 0.92388													
5493-MPC	1			5187		3		-1.		101500		3		.0						EM518713	
5494-EM518713				101501				3 0.92388		101502				3-0.70711						EM518723	
5495-EM518723				101503				3-0.38268													
5496-MPC	1			5187		4		-1.		101500		4		.0						EM518714	
5497-EM518714				101501				4 0.92388		101502				4-0.70711						EM518724	
5498-EM518724				101503				4-0.38268													
5499-MPC	1			5187		5		-1.		101500		5		.0						EM518715	
5500-EM518715				101501				5 0.92388		101502				5-0.70711						EM518725	

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CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
S501-EM518725				101503		5-0.38269					
S502-MPC	1		5187	6		-1.	101500	6	1.00000		EM518716
S503-EM518716			101501			6-0.38268	101502		6-0.70711		EM518726
S504-EM518726			101503			6 0.92388					
S505-MPC	1		5188	1		-1.	101500	1	1.00000		EM518811
S506-EM518811			101501			1-0.70711	101502		1-0.00000		EM518821
S507-EM518821			101503			1 0.70711					
S508-MPC	1		5188	2		-1.	101500	2	1.00000		EM518812
S509-EM518812			101501			2-0.70711	101502		2-0.00000		EM518822
S510-EM518822			101503			2 0.70711					
S511-MPC	1		5188	3		-1.	101500	3	.0		EM518813
S512-EM518813			101501			3 0.70711	101502		3-1.00000		EM518823
S513-EM518823			101503			3 0.70710					
S514-MPC	1		5188	4		-1.	101500	4	.0		EM518814
S515-EM518814			101501			4 0.70711	101502		4-1.00000		EM518824
S516-EM518824			101503			4 0.70710					
S517-MPC	1		5188	5		-1.	101500	5	.0		EM518815
S518-EM518815			101501			5 0.70711	101502		5-1.00000		EM518825
S519-EM518825			101503			5 0.70710					
S520-MPC	1		5188	6		-1.	101500	6	1.00000		EM518816
S521-EM518816			101501			6-0.70711	101502		6-0.00000		EM518826
S522-EM518826			101503			6 0.70711					
S523-MPC	1		5189	1		-1.	101500	1	1.00000		EM518911
S524-EM518911			101501			1-0.92388	101502		1 0.70711		EM518921
S525-EM518921			101503			1-0.38268					
S526-MPC	1		5189	2		-1.	101500	2	1.00000		EM518912
S527-EM518912			101501			2-0.92388	101502		2 0.70711		EM518922
S528-EM518922			101503			2-0.38268					
S529-MPC	1		5189	3		-1.	101500	3	.0		EM518913
S530-EM518913			101501			3 0.38268	101502		3-0.70711		EM518923
S531-EM518923			101503			3 0.92388					
S532-MPC	1		5189	4		-1.	101500	4	.0		EM518914
S533-EM518914			101501			4 0.38268	101502		4-0.70711		EM518924
S534-EM518924			101503			4 0.92388					
S535-MPC	1		5189	5		-1.	101500	5	.0		EM518915
S536-EM518915			101501			5 0.38268	101502		5-0.70711		EM518925
S537-EM518925			101503			5 0.92388					
S538-MPC	1		5189	6		-1.	101500	6	1.00000		EM518916
S539-EM518916			101501			6-0.92388	101502		6 0.70711		EM518926
S540-EM518926			101503			6-0.38268					
S541-MPC	1		5190	1		-1.	101500	1	1.00000		EM519011
S542-EM519011			101501			1-1.00000	101502		1 1.00000		EM519021
S543-EM519021			101503			1-1.00000					
S544-MPC	1		5190	2		-1.	101500	2	1.00000		EM519012
S545-EM519012			101501			2-1.00000	101502		2 1.00000		EM519022
S546-EM519022			101503			2-1.00000					
S547-MPC	1		5190	3		-1.	101500	3	.0		EM519013
S548-EM519013			101501			3 0.00000	101502		3-0.00000		EM519023
S549-EM519023			101503			3 0.00000					
S550-MPC	1		5190	4		-1.	101500	4	.0		EM519014

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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
5551-EM519014			101501		4 0.00000	101502		4-0.00000		EM519024	
5552-EM519024			101503		4 0.00000						
5553-MPC	1	5190	5		-1.	101500	5	.0		EM519015	
5554-EM519015			101501		5 0.00000	101502		5-0.00000		EM519025	
5555-EM519025			101503		5 0.00000						
5556-MPC	1	5190	6		-1.	101500	6	1.00000		EM519016	
5557-EM519016			101501		6-1.00000	101502		6 1.00000		EM519026	
5558-EM519026			101503		6-1.00000						
5559-MPC	1	5195	1		-1.	101600	1	1.00000		EM519511	
5560-EM519511			101601		1 1.00000	101602		1 1.00000		EM519521	
5561-EM519521			101603		1 1.00000						
5562-MPC	1	5195	2		-1.	101600	2	1.00000		EM519512	
5563-EM519512			101601		2 1.00000	101602		2 1.00000		EM519522	
5564-EM519522			101603		2 1.00000						
5565-MPC	1	5195	3		-1.	101600	3	.0		EM519513	
5566-EM519513			101601		3 0.0	101602		3 0.0		EM519523	
5567-EM519523			101603		3 0.0						
5568-MPC	1	5195	4		-1.	101600	4	.0		EM519514	
5569-EM519514			101601		4 0.0	101602		4 0.0		EM519524	
5570-EM519524			101603		4 0.0						
5571-MPC	1	5195	5		-1.	101600	5	.0		EM519515	
5572-EM519515			101601		5 0.0	101602		5 0.0		EM519525	
5573-EM519525			101603		5 0.0						
5574-MPC	1	5195	6		-1.	101600	6	1.00000		EM519516	
5575-EM519516			101601		6 1.00000	101602		6 1.00000		EM519526	
5576-EM519526			101603		6 1.00000						
5577-MPC	1	5196	1		-1.	101600	1	1.00000		EM519611	
5578-EM519611			101601		1 0.92388	101602		1 0.70711		EM519621	
5579-EM519621			101603		1 0.38268						
5580-MPC	1	5196	2		-1.	101600	2	1.00000		EM519612	
5581-EM519612			101601		2 0.92388	101602		2 0.70711		EM519622	
5582-EM519622			101603		2 0.38268						
5583-MPC	1	5196	3		-1.	101600	3	.0		EM519613	
5584-EM519613			101601		3 0.38268	101602		3 0.70711		EM519623	
5585-EM519623			101603		3 0.92388						
5586-MPC	1	5196	4		-1.	101600	4	.0		EM519614	
5587-EM519614			101601		4 0.38268	101602		4 0.70711		EM519624	
5588-EM519624			101603		4 0.92388						
5589-MPC	1	5196	5		-1.	101600	5	.0		EM519615	
5590-EM519615			101601		5 0.38268	101602		5 0.70711		EM519625	
5591-EM519625			101603		5 0.92388						
5592-MPC	1	5196	6		-1.	101600	6	1.00000		EM519616	
5593-EM519616			101601		6 0.92388	101602		6 0.70711		EM519626	
5594-EM519626			101603		6 0.38268						
5595-MPC	1	5197	1		-1.	101600	1	1.00000		EM519711	
5596-EM519711			101601		1 0.70711	101602		1 0.00000		EM519721	
5597-EM519721			101603		1-0.70711						
5598-MPC	1	5197	2		-1.	101600	2	1.00000		EM519712	
5599-EM519712			101601		2 0.70711	101602		2 0.00000		EM519722	
5600-EM519722			101603		2-0.70711						

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CARD	1	2	3	4	5	6	7	8	9	10
5601-MPC	1	5197	3	-1.	101600	3	.0		CM519713	
5602-CM519713		101601		3 0.70711	101602		3 1.00000		CM519723	
5603-CM519723		101603		3 0.70711						
5604-MPC	1	5157	4	-1.	101600	4	.0		CM519714	
5605-CM519714		101601		4 0.70711	101602		4 1.00000		CM519724	
5606-CM519724		101603		4 0.70711						
5607-MPC	1	5197	5	-1.	101600	5	.0		CM519715	
5608-CM519715		101601		5 0.70711	101602		5 1.00000		CM519725	
5609-CM519725		101603		5 0.70711						
5610-MPC	1	5197	6	-1.	101600	6	1.00000		CM519716	
5611-CM519716		101601		6 0.70711	101602		6 0.00000		CM519726	
5612-CM519726		101603		6-0.70711						
5613-MPC	1	5198	1	-1.	101600	1	1.00000		CM519811	
5614-CM519811		101601		1 0.38268	101602		1-0.70711		CM519821	
5615-CM519821		101603		1-0.92388						
5616-MPC	1	5198	2	-1.	101600	2	1.00000		CM519812	
5617-CM519812		101601		2 0.38268	101602		2-0.70711		CM519822	
5618-CM519822		101603		2-0.92388						
5619-MPC	1	5198	3	-1.	101600	3	.0		CM519813	
5620-CM519813		101601		3 0.92388	101602		3 0.70711		CM519823	
5621-CM519823		101603		3-0.38268						
5622-MPC	1	5198	4	-1.	101600	4	.0		CM519814	
5623-CM519814		101601		4 0.92388	101602		4 0.70711		CM519824	
5624-CM519824		101603		4-0.38268						
5625-MPC	1	5198	5	-1.	101600	5	.0		CM519815	
5626-CM519815		101601		5 0.92388	101602		5 0.70711		CM519825	
5627-CM519825		101603		5-0.38268						
5628-MPC	1	5198	6	-1.	101600	6	1.00000		CM519816	
5629-CM519816		101601		6 0.38268	101602		6-0.70711		CM519826	
5630-CM519826		101603		6-0.92388						
5631-MPC	1	5199	1	-1.	101600	1	1.00000		CM519911	
5632-CM519911		101601		1 0.00000	101602		1-1.00000		CM519921	
5633-CM519921		101603		1-0.00000						
5634-MPC	1	5199	2	-1.	101600	2	1.00000		CM519912	
5635-CM519912		101601		2 0.00000	101602		2-1.00000		CM519922	
5636-CM519922		101603		2-0.00000						
5637-MPC	1	5199	3	-1.	101600	3	.0		CM519913	
5638-CM519913		101601		3 1.00000	101602		3 0.00000		CM519923	
5639-CM519923		101603		3-1.00000						
5640-MPC	1	5199	4	-1.	101600	4	.0		CM519914	
5641-CM519914		101601		4 1.00000	101602		4 0.00000		CM519924	
5642-CM519924		101603		4-1.00000						
5643-MPC	1	5199	5	-1.	101600	5	.0		CM519915	
5644-CM519915		101601		5 1.00000	101602		5 0.00000		CM519925	
5645-CM519925		101603		5-1.00000						
5646-MPC	1	5199	6	-1.	101600	6	1.00000		CM519916	
5647-CM519916		101601		6 0.00000	101602		6-1.00000		CM519926	
5648-CM519926		101603		6-0.00000						
5649-MPC	1	5200	1	-1.	101600	1	1.00000		CM520011	
5650-CM520011		101601		1-0.38268	101602		1-0.70711		CM520021	



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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
5651-EM520021		101603			1	0.92388					
5652-MPC	1	5200	2		-1.	101600	2		1.00000		EM520012
5653-EM520012		101601			2	-0.38268	101602		2	-0.70711	EM520022
5654-EM520022		101603			2	0.92388					
5655-MPC	1	5200	3		-1.	101600	3		.0		EM520013
5656-EM520013		101601			3	0.92388	101602		3	-0.70711	EM520023
5657-EM520023		101603			3	-0.38269					
5658-MPC	1	5200	4		-1.	101600	4		.0		EM520014
5659-EM520014		101601			4	0.92388	101602		4	-0.70711	EM520024
5660-EM520024		101603			4	-0.38269					
5661-MPC	1	5200	5		-1.	101600	5		.0		EM520015
5662-EM520015		101601			5	0.92388	101602		5	-0.70711	EM520025
5663-EM520025		101603			5	-0.38269					
5664-MPC	1	5200	6		-1.	101600	6		1.00000		EM520016
5665-EM520016		101601			6	-0.38268	101602		6	-0.70711	EM520026
5666-EM520026		101603			6	0.92388					
5667-MPC	1	5201	1		-1.	101600	1		1.00000		EM520111
5668-EM520111		101601			1	-0.70711	101602		1	-0.00000	EM520121
5669-EM520121		101603			1	0.70711					
5670-MPC	1	5201	2		-1.	101600	2		1.00000		EM520112
5671-EM520112		101601			2	-0.70711	101602		2	-0.00000	EM520122
5672-EM520122		101603			2	0.70711					
5673-MPC	1	5201	3		-1.	101600	3		.0		EM520113
5674-EM520113		101601			3	0.70711	101602		3	-1.00000	EM520123
5675-EM520123		101603			3	0.70710					
5676-MPC	1	5201	4		-1.	101600	4		.0		EM520114
5677-EM520114		101601			4	0.70711	101602		4	-1.00000	EM520124
5678-EM520124		101603			4	0.70710					
5679-MPC	1	5201	5		-1.	101600	5		.0		EM520115
5680-EM520115		101601			5	0.70711	101602		5	-1.00000	EM520125
5681-EM520125		101603			5	0.70710					
5682-MPC	1	5201	6		-1.	101600	6		1.00000		EM520116
5683-EM520116		101601			6	-0.70711	101602		6	-0.00000	EM520126
5684-EM520126		101603			6	0.70711					
5685-MPC	1	5202	1		-1.	101600	1		1.00000		EM520211
5686-EM520211		101601			1	-0.92388	101602		1	0.70711	EM520221
5687-EM520221		101603			1	-0.38268					
5688-MPC	1	5202	2		-1.	101600	2		1.00000		EM520212
5689-EM520212		101601			2	-0.92388	101602		2	0.70711	EM520222
5690-EM520222		101603			2	-0.38268					
5691-MPC	1	5202	3		-1.	101600	3		.0		EM520213
5692-EM520213		101601			3	0.38268	101602		3	-0.70711	EM520223
5693-EM520223		101603			3	0.92388					
5694-MPC	1	5202	4		-1.	101600	4		.0		EM520214
5695-EM520214		101601			4	0.38268	101602		4	-0.70711	EM520224
5696-EM520224		101603			4	0.92388					
5697-MPC	1	5202	5		-1.	101600	5		.0		EM520215
5698-EM520215		101601			5	0.38268	101602		5	-0.70711	EM520225
5699-EM520225		101603			5	0.92388					
5700-MPC	1	5202	6		-1.	101600	6		1.00000		EM520216

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
5701-6M520216			101601		6-0.92388	101602		6	0.70711		6M520226
5702-6M520226			101603		6-0.38268						
5703-MPC	1	5203	1		-1.	101600	1		1.00000		6M520311
5704-6M520311			101601		1-1.00000	101602		1	1.00000		6M520321
5705-6M520321			101603		1-1.00000						
5706-MPC	1	5203	2		-1.	101600	2		1.00000		6M520312
5707-6M520312			101601		2-1.00000	101602		2	1.00000		6M520322
5708-6M520322			101603		2-1.00000						
5709-MPC	1	5203	3		-1.	101600	3		.0		6M520313
5710-6M520313			101601		3	0.00000	101602		3-0.00000		6M520323
5711-6M520323			101603		3	0.00000					
5712-MPC	1	5203	4		-1.	101600	4		.0		6M520314
5713-6M520314			101601		4	0.00000	101602		4-0.00000		6M520324
5714-6M520324			101603		4	0.00000					
5715-MPC	1	5203	5		-1.	101600	5		.0		6M520315
5716-6M520315			101601		5	0.00000	101602		5-0.00000		6M520325
5717-6M520325			101603		5	0.00000					
5718-MPC	1	5203	6		-1.	101600	6		1.00000		6M520316
5719-6M520316			101601		6-1.00000	101602		6	1.00000		6M520326
5720-6M520326			101603		6-1.00000						
5721-MPC	1	5204	1		1.	101600	1		-.9919		6X1
5722-6X1			101600	2	.1269						
5723-MPC	1	8070	1		-1.	110400	1		1.00000		6M807011
5724-6M807011			110401		1	1.00000	110402		1	1.00000	6M807021
5725-6M807021			110403		1	1.00000					
5726-MPC	1	8070	2		-1.	110400	2		.0		6M807012
5727-6M807012			110401		2	0.0	110402		2	0.0	6M807022
5728-6M807022			110403		2	0.0					
5729-MPC	1	8070	3		-1.	110400	3		1.00000		6M807013
5730-6M807013			110401		3	1.00000	110402		3	1.00000	6M807023
5731-6M807023			110403		3	1.00000					
5732-MPC	1	8070	4		-1.	110400	4		.0		6M807014
5733-6M807014			110401		4	0.0	110402		4	0.0	6M807024
5734-6M807024			110403		4	0.0					
5735-MPC	1	8070	5		-1.	110400	5		1.00000		6M807015
5736-6M807015			110401		5	1.00000	110402		5	1.00000	6M807025
5737-6M807025			110403		5	1.00000					
5738-MPC	1	8070	6		-1.	110400	6		.0		6M807016
5739-6M807016			110401		6	0.0	110402		6	0.0	6M807026
5740-6M807026			110403		6	0.0					
5741-MPC	1	8071	1		-1.	110400	1		1.00000		6M807111
5742-6M807111			110401		1	0.92388	110402		1	0.70711	6M807121
5743-6M807121			110403		1	0.38268					
5744-MPC	1	8071	2		-1.	110400	2		.0		6M807112
5745-6M807112			110401		2	0.38268	110402		2	0.70711	6M807122
5746-6M807122			110403		2	0.92388					
5747-MPC	1	8071	3		-1.	110400	3		1.00000		6M807113
5748-6M807113			110401		3	0.92388	110402		3	0.70711	6M807123
5749-6M807123			110403		3	0.38268					
5750-MPC	1	8071	4		-1.	110400	4		.0		6M807114

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
5751-EM807114		110401		4 0.38268	110402		4 0.70711		EM807124		
5752-EM807124		110403		4 0.92388							
5753-MPC 1		8071 5		-1.	110400 5		1.00000		EM807115		
5754-EM807115		110401		5 0.92388	110402		5 0.70711		EM807125		
5755-EM807125		110403		5 0.38268							
5756-MPC 1		8071 6		-1.	110400 6		.0		EM807116		
5757-EM807116		110401		6 0.38268	110402		6 0.70711		EM807126		
5758-EM807126		110403		6 0.92388							
5759-MPC 1		8072 1		-1.	110400 1		1.00000		EM807211		
5760-EM807211		110401		1 0.70711	110402		1 0.00000		EM807221		
5761-EM807221		110403		1-0.70711							
5762-MPC 1		8072 2		-1.	110400 2		.0		EM807212		
5763-EM807212		110401		2 0.70711	110402		2 1.00000		EM807222		
5764-EM807222		110403		2 0.70711							
5765-MPC 1		8072 3		-1.	110400 3		1.00000		EM807213		
5766-EM807213		110401		3 0.70711	110402		3 0.00000		EM807223		
5767-EM807223		110403		3-0.70711							
5768-MPC 1		8072 4		-1.	110400 4		.0		EM807214		
5769-EM807214		110401		4 0.70711	110402		4 1.00000		EM807224		
5770-EM807224		110403		4 0.70711							
5771-MPC 1		8072 5		-1.	110400 5		1.00000		EM807215		
5772-EM807215		110401		5 0.70711	110402		5 0.00000		EM807225		
5773-EM807225		110403		5-0.70711							
5774-MPC 1		8072 6		-1.	110400 6		.0		EM807216		
5775-EM807216		110401		6 0.70711	110402		6 1.00000		EM807226		
5776-EM807226		110403		6 0.70711							
5777-MPC 1		8073 1		-1.	110400 1		1.00000		EM807311		
5778-EM807311		110401		1 0.38268	110402		1-0.70711		EM807321		
5779-EM807321		110403		1-0.92388							
5780-MPC 1		8073 2		-1.	110400 2		.0		EM807312		
5781-EM807312		110401		2 0.92388	110402		2 0.70711		EM807322		
5782-EM807322		110403		2-0.38268							
5783-MPC 1		8073 3		-1.	110400 3		1.00000		EM807313		
5784-EM807313		110401		3 0.38268	110402		3-0.70711		EM807323		
5785-EM807323		110403		3-0.92388							
5786-MPC 1		8073 4		-1.	110400 4		.0		EM807314		
5787-EM807314		110401		4 0.92388	110402		4 0.70711		EM807324		
5788-EM807324		110403		4-0.38268							
5789-MPC 1		8073 5		-1.	110400 5		1.00000		EM807315		
5790-EM807315		110401		5 0.38268	110402		5-0.70711		EM807325		
5791-EM807325		110403		5-0.92388							
5792-MPC 1		8073 6		-1.	110400 6		.0		EM807316		
5793-EM807316		110401		6 0.92388	110402		6 0.70711		EM807326		
5794-EM807326		110403		6-0.38268							
5795-MPC 1		8074 1		-1.	110400 1		1.00000		EM807411		
5796-EM807411		110401		1 0.19732	110402		1-0.92213		EM807421		
5797-EM807421		110403		1-0.56122							
5798-MPC 1		8074 2		-1.	110400 2		.0		EM807412		
5799-EM807412		110401		2 0.98034	110402		2 0.38687		EM807422		
5800-EM807422		110403		2-0.82767							

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CARD	1	2	3	4	5	6	7	8	9	10
5901- MPC	1	8074	3	-1.	110400	3	1.00000		EM807413	
5902- EM807413		110401		3 0.19732	110402		3-0.92213		EM807423	
5903- EM807423		110403		3-0.56122						
5904- MPC	1	8074	4	-1.	110400	4	.0		EM807414	
5905- EM807414		110401		4 0.98034	110402		4 0.38687		EM807424	
5906- EM807424		110403		4-0.82767						
5907- MPC	1	8074	5	-1.	110400	5	1.00000		EM807415	
5909- EM807415		110401		5 0.19732	110402		5-0.92213		EM807425	
5909- EM807425		110403		5-0.56122						
5910- MPC	1	8074	6	-1.	110400	6	.0		EM807416	
5911- EM807416		110401		6 0.98034	110402		6 0.38687		EM807426	
5912- EM807426		110403		6-0.82767						
5913- MPC	1	8075	1	-1.	110400	1	1.00000		EM807511	
5914- EM807511		110401		1 0.00000	110402		1-1.00000		EM807521	
5915- EM807521		110403		1-0.00000						
5916- MPC	1	8075	2	-1.	110400	2	.0		EM807512	
5917- EM807512		110401		2 1.00000	110402		2 0.00000		EM807522	
5919- EM807522		110403		2-1.00000						
5919- MPC	1	8075	3	-1.	110400	3	1.00000		EM807513	
5920- EM807513		110401		3 0.00000	110402		3-1.00000		EM807523	
5921- EM807523		110403		3-0.00000						
5922- MPC	1	8075	4	-1.	110400	4	.0		EM807514	
5923- EM807514		110401		4 1.00000	110402		4 0.00000		EM807524	
5924- EM807524		110403		4-1.00000						
5925- MPC	1	8075	5	-1.	110400	5	1.00000		EM807515	
5926- EM807515		110401		5 0.00000	110402		5-1.00000		EM807525	
5927- EM807525		110403		5-0.00000						
5928- MPC	1	8075	6	-1.	110400	6	.0		EM807516	
5929- EM807516		110401		6 1.00000	110402		6 0.00000		EM807526	
5930- EM807526		110403		6-1.00000						
5931- MPC	1	8076	1	-1.	110400	1	1.00000		EM807611	
5932- EM807611		110401		1-0.38268	110402		1-0.70711		EM807621	
5933- EM807621		110403		1 0.92388						
5934- MPC	1	8076	2	-1.	110400	2	.0		EM807612	
5935- EM807612		110401		2 0.92388	110402		2-0.70711		EM807622	
5936- EM807622		110403		2-0.38269						
5937- MPC	1	8076	3	-1.	110400	3	1.00000		EM807613	
5938- EM807613		110401		3-0.38268	110402		3-0.70711		EM807623	
5939- EM807623		110403		3 0.92388						
5940- MPC	1	8076	4	-1.	110400	4	.0		EM807614	
5941- EM807614		110401		4 0.92388	110402		4-0.70711		EM807624	
5942- EM807624		110403		4-0.38269						
5943- MPC	1	8076	5	-1.	110400	5	1.00000		EM807615	
5944- EM807615		110401		5-0.38268	110402		5-0.70711		EM807625	
5945- EM807625		110403		5 0.92388						
5946- MPC	1	8076	6	-1.	110400	6	.0		EM807616	
5947- EM807616		110401		6 0.92388	110402		6-0.70711		EM807626	
5948- EM807626		110403		6-0.38269						
5949- MPC	1	8077	1	-1.	110400	1	1.00000		EM807711	
5950- EM807711		110401		1-0.70711	110402		1-0.00000		EM807721	

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CARD	CJUNT	1	2	3	4	5	6	7	8	9	10
5851- EM8C7721		110403		1 0.70711							
5852- MPC	1	8077	2	-1.	110400	2		.0		EM807712	
5853- EM8C7712		110401		2 0.70711	110402			2-1.00000		EM807722	
5854- EM8C7722		110403		2 0.70710							
5855- MPC	1	8077	3	-1.	110400	3		1.00000		EM807713	
5856- EM8C7713		110401		3-0.70711	110402			3-0.00000		EM807723	
5857- EM8C7723		110403		3 0.70711							
5859- MPC	1	8077	4	-1.	110400	4		.0		EM807714	
5859- EM8C7714		110401		4 0.70711	110402			4-1.00000		EM807724	
5860- EM8C7724		110403		4 0.70710							
5861- MPC	1	8077	5	-1.	110400	5		1.00000		EM807715	
5862- EM8C7715		110401		5-0.70711	110402			5-0.00000		EM807725	
5863- EM8C7725		110403		5 0.70711							
5864- MPC	1	8077	6	-1.	110400	6		.0		EM807716	
5865- EM8C7716		110401		6 0.70711	110402			6-1.00000		EM807726	
5866- EM8C7726		110403		6 0.70710							
5867- MPC	1	8078	1	-1.	110400	1		1.00000		EM807811	
5869- EM8C7811		110401		1-0.92388	110402			1 0.70711		EM807821	
5869- EM8C7821		110403		1-0.38268							
5870- MPC	1	8078	2	-1.	110400	2		.0		EM807812	
5871- EM8C7812		110401		2 0.38268	110402			2-0.70711		EM807822	
5872- EM8C7822		110403		2 0.92388							
5873- MPC	1	8078	3	-1.	110400	3		1.00000		EM807813	
5874- EM8C7813		110401		3-0.92388	110402			3 0.70711		EM807823	
5875- EM8C7823		110403		3-0.38268							
5876- MPC	1	8078	4	-1.	110400	4		.0		EM807814	
5877- EM8C7814		110401		4 0.38268	110402			4-0.70711		EM807824	
5878- EM8C7824		110403		4 0.92388							
5879- MPC	1	8078	5	-1.	110400	5		1.00000		EM807815	
5880- EM8C7815		110401		5-0.92388	110402			5 0.70711		EM807825	
5881- EM8C7825		110403		5-0.38268							
5882- MPC	1	8078	6	-1.	110400	6		.0		EM807816	
5883- EM8C7816		110401		6 0.38268	110402			6-0.70711		EM807826	
5884- EM8C7826		110403		6 0.92388							
5885- MPC	1	8079	1	-1.	110400	1		1.00000		EM807911	
5885- EM8C7911		110401		1-1.00000	110402			1 1.00000		EM807921	
5887- EM8C7921		110403		1-1.00000							
5889- MPC	1	8079	2	-1.	110400	2		.0		EM807912	
5889- EM8C7912		110401		2 0.00000	110402			2-0.00000		EM807922	
5890- EM8C7922		110403		2 0.00000							
5891- MPC	1	8079	3	-1.	110400	3		1.00000		EM807913	
5892- EM8C7913		110401		3-1.00000	110402			3 1.00000		EM807923	
5893- EM8C7923		110403		3-1.00000							
5894- MPC	1	8079	4	-1.	110400	4		.0		EM807914	
5895- EM8C7914		110401		4 0.00000	110402			4-0.00000		EM807924	
5895- EM8C7924		110403		4 0.00000							
5897- MPC	1	8079	5	-1.	110400	5		1.00000		EM807915	
5893- EM8C7915		110401		5-1.00000	110402			5 1.00000		EM807925	
5899- EM8C7925		110403		5-1.00000							
5900- MPC	1	8079	6	-1.	110400	6		.0		EM807916	

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
5901-EM8C7916				110401		6 0.00000	110402		6-0.00000		EM807926
5902-EM8C7926				110403		6 0.00000					
5903-MPC	1		8110	1		-1.	110100	1	1.00000		EM811011
5904-EM811011				110101		1 1.00000	110102		1 1.00000		EM811021
5905-EM811021				110103		1 1.00000					
5906-MPC	1		8110	2		-1.	110100	2	.0		EM811012
5907-EM811012				110101		2 0.0	110102		2 0.0		EM811022
5908-EM811022				110103		2 0.0					
5909-MPC	1		8110	3		-1.	110100	3	1.00000		EM811013
5910-EM811013				110101		3 1.00000	110102		3 1.00000		EM811023
5911-EM811023				110103		3 1.00000					
5912-MPC	1		8110	4		-1.	110100	4	.0		EM811014
5913-EM811014				110101		4 0.0	110102		4 0.0		EM811024
5914-EM811024				110103		4 0.0					
5915-MPC	1		8110	5		-1.	110100	5	1.00000		EM811015
5916-EM811015				110101		5 1.00000	110102		5 1.00000		EM811025
5917-EM811025				110103		5 1.00000					
5918-MPC	1		8110	6		-1.	110100	6	.0		EM811016
5919-EM811016				110101		6 0.0	110102		6 0.0		EM811026
5920-EM811026				110103		6 0.0					
5921-MPC	1		8111	1		-1.	110100	1	1.00000		EM811111
5922-EM811111				110101		1 0.92388	110102		1 0.70711		EM811121
5923-EM811121				110103		1 0.38268					
5924-MPC	1		8111	2		-1.	110100	2	.0		EM811112
5925-EM811112				110101		2 0.38268	110102		2 0.70711		EM811122
5926-EM811122				110103		2 0.92388					
5927-MPC	1		8111	3		-1.	110100	3	1.00000		EM811113
5928-EM811113				110101		3 0.92388	110102		3 0.70711		EM811123
5929-EM811123				110103		3 0.38268					
5930-MPC	1		8111	4		-1.	110100	4	.0		EM811114
5931-EM811114				110101		4 0.38268	110102		4 0.70711		EM811124
5932-EM811124				110103		4 0.92388					
5933-MPC	1		8111	5		-1.	110100	5	1.00000		EM811115
5934-EM811115				110101		5 0.92388	110102		5 0.70711		EM811125
5935-EM811125				110103		5 0.38268					
5936-MPC	1		8111	6		-1.	110100	6	.0		EM811116
5937-EM811116				110101		6 0.38268	110102		6 0.70711		EM811126
5938-EM811126				110103		6 0.92388					
5939-MPC	1		8112	1		-1.	110100	1	1.00000		EM811211
5940-EM811211				110101		1 0.70711	110102		1 0.00000		EM811221
5941-EM811221				110103		1-0.70711					
5942-MPC	1		8112	2		-1.	110100	2	.0		EM811212
5943-EM811212				110101		2 0.70711	110102		2 1.00000		EM811222
5944-EM811222				110103		2 0.70711					
5945-MPC	1		8112	3		-1.	110100	3	1.00000		EM811213
5946-EM811213				110101		3 0.70711	110102		3 0.00000		EM811223
5947-EM811223				110103		3-0.70711					
5948-MPC	1		8112	4		-1.	110100	4	.0		EM811214
5949-EM811214				110101		4 0.70711	110102		4 1.00000		EM811224
5950-EM811224				110103		4 0.70711					

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S O R T E D B U L K D A T A E C H O

CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
5951-MPC	1			8112		5		-1.		110100		5		1.00000						EM811215	
5952-EM811215				110101				5 0.70711		110102				5 0.00000						EM811225	
5953-EM811225				110103				5-0.70711													
5954-MPC	1			8112		6		-1.		110100		6		.0						EM811216	
5955-EM811216				110101				6 0.70711		110102				6 1.00000						EM811226	
5956-EM811226				110103				6 0.70711													
5957-MPC	1			8113		1		-1.		110100		1		1.00000						EM811311	
5958-EM811311				110101				1 0.38268		110102				1-0.70711						EM811321	
5959-EM811321				110103				1-0.92388													
5960-MPC	1			8113		2		-1.		110100		2		.0						EM811312	
5961-EM811312				110101				2 0.92388		110102				2 0.70711						EM811322	
5962-EM811322				110103				2-0.38268													
5963-MPC	1			8113		3		-1.		110100		3		1.00000						EM811313	
5964-EM811313				110101				3 0.38268		110102				3-0.70711						EM811323	
5965-EM811323				110103				3-0.92388													
5966-MPC	1			8113		4		-1.		110100		4		.0						EM811314	
5967-EM811314				110101				4 0.92388		110102				4 0.70711						EM811324	
5968-EM811324				110103				4-0.38268													
5969-MPC	1			8113		5		-1.		110100		5		1.00000						EM811315	
5970-EM811315				110101				5 0.38268		110102				5-0.70711						EM811325	
5971-EM811325				110103				5-0.92388													
5972-MPC	1			8113		6		-1.		110100		6		.0						EM811316	
5973-EM811316				110101				6 0.92388		110102				6 0.70711						EM811326	
5974-EM811326				110103				6-0.38268													
5975-MPC	1			8114		1		-1.		110100		1		1.00000						EM811411	
5976-EM811411				110101				1 0.19732		110102				1-0.92213						EM811421	
5977-EM811421				110103				1-0.56122													
5978-MPC	1			8114		2		-1.		110100		2		.0						EM811412	
5979-EM811412				110101				2 0.98034		110102				2 0.38687						EM811422	
5980-EM811422				110103				2-0.82767													
5981-MPC	1			8114		3		-1.		110100		3		1.00000						EM811413	
5982-EM811413				110101				3 0.19732		110102				3-0.92213						EM811423	
5983-EM811423				110103				3-0.56122													
5984-MPC	1			8114		4		-1.		110100		4		.0						EM811414	
5985-EM811414				110101				4 0.98034		110102				4 0.38687						EM811424	
5986-EM811424				110103				4-0.82767													
5987-MPC	1			8114		5		-1.		110100		5		1.00000						EM811415	
5988-EM811415				110101				5 0.19732		110102				5-0.92213						EM811425	
5989-EM811425				110103				5-0.56122													
5990-MPC	1			8114		6		-1.		110100		6		.0						EM811416	
5991-EM811416				110101				6 0.98034		110102				6 0.38687						EM811426	
5992-EM811426				110103				6-0.82767													
5993-MPC	1			8115		1		-1.		110100		1		1.00000						EM811511	
5994-EM811511				110101				1 0.00000		110102				1-1.00000						EM811521	
5995-EM811521				110103				1-0.00000													
5996-MPC	1			8115		2		-1.		110100		2		.0						EM811512	
5997-EM811512				110101				2 1.00000		110102				2 0.00000						EM811522	
5998-EM811522				110103				2-1.00000													
5999-MPC	1			8115		3		-1.		110100		3		1.00000						EM811513	
6000-EM811513				110101				3 0.00000		110102				3-1.00000						EM811523	

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..								
6001-EM811523			110103		3-0.00000					
6002-MPC	1		8115	4	-1.	110100	4	.0		EM811514
6003-EM811514			110101		4 1.00000	110102		4 0.00000		EM811524
6004-EM811524			110103		4-1.00000					
6005-MPC	1		8115	5	-1.	110100	5	1.00000		EM811515
6006-EM811515			110101		5 0.00000	110102		5-1.00000		EM811525
6007-EM811525			110103		5-0.00000					
6008-MPC	1		8115	6	-1.	110100	6	.0		EM811516
6009-EM811516			110101		6 1.00000	110102		6 0.00000		EM811526
6010-EM811526			110103		6-1.00000					
6011-MPC	1		8116	1	-1.	110100	1	1.00000		EM811611
6012-EM811611			110101		1-0.38268	110102		1-0.70711		EM811621
6013-EM811621			110103		1 0.92388					
6014-MPC	1		8116	2	-1.	110100	2	.0		EM811612
6015-EM811612			110101		2 0.92388	110102		2-0.70711		EM811622
6016-EM811622			110103		2-0.38269					
6017-MPC	1		8116	3	-1.	110100	3	1.00000		EM811613
6018-EM811613			110101		3-0.38268	110102		3-0.70711		EM811623
6019-EM811623			110103		3 0.92388					
6020-MPC	1		8116	4	-1.	110100	4	.0		EM811614
6021-EM811614			110101		4 0.92388	110102		4-0.70711		EM811624
6022-EM811624			110103		4-0.38269					
6023-MPC	1		8116	5	-1.	110100	5	1.00000		EM811615
6024-EM811615			110101		5-0.38268	110102		5-0.70711		EM811625
6025-EM811625			110103		5 0.92388					
6026-MPC	1		8116	6	-1.	110100	6	.0		EM811616
6027-EM811616			110101		6 0.92388	110102		6-0.70711		EM811626
6028-EM811626			110103		6-0.38269					
6029-MPC	1		8117	1	-1.	110100	1	1.00000		EM811711
6030-EM811711			110101		1-0.70711	110102		1-0.00000		EM811721
6031-EM811721			110103		1 0.70711					
6032-MPC	1		8117	2	-1.	110100	2	.0		EM811712
6033-EM811712			110101		2 0.70711	110102		2-1.00000		EM811722
6034-EM811722			110103		2 0.70710					
6035-MPC	1		8117	3	-1.	110100	3	1.00000		EM811713
6036-EM811713			110101		3-0.70711	110102		3-0.00000		EM811723
6037-EM811723			110103		3 0.70711					
6038-MPC	1		8117	4	-1.	110100	4	.0		EM811714
6039-EM811714			110101		4 0.70711	110102		4-1.00000		EM811724
6040-EM811724			110103		4 0.70710					
6041-MPC	1		8117	5	-1.	110100	5	1.00000		EM811715
6042-EM811715			110101		5-0.70711	110102		5-0.00000		EM811725
6043-EM811725			110103		5 0.70711					
6044-MPC	1		8117	6	-1.	110100	6	.0		EM811716
6045-EM811716			110101		6 0.70711	110102		6-1.00000		EM811726
6046-EM811726			110103		6 0.70710					
6047-MPC	1		8118	1	-1.	110100	1	1.00000		EM811811
6048-EM811811			110101		1-0.92388	110102		1 0.70711		EM811821
6049-EM811821			110103		1-0.38268					
6050-MPC	1		8118	2	-1.	110100	2	.0		EM811812



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SORTED BULK DATA ECHO																					
CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
6051-EM811812						110101				2 0.38268		110102				2-0.70711				EM811822	
6052-EM811822						110103				2 0.92388											
6053-MPC	1					8118	3			-1.		110100	3			1.00000				EM811813	
6054-EM811813						110101				3-0.92388		110102				3 0.70711				EM811823	
6055-EM811823						110103				3-0.38268											
6055-MPC	1					8118	4			-1.		110100	4			.0				EM811814	
6057-EM811814						110101				4 0.38268		110102				4-0.70711				EM811824	
6059-EM811824						110103				4 0.92388											
6059-MPC	1					8118	5			-1.		110100	5			1.00000				EM811815	
6060-EM811815						110101				5-0.92388		110102				5 0.70711				EM811825	
6061-EM811825						110103				5-0.38268											
6062-MPC	1					8118	6			-1.		110100	6			.0				EM811816	
6063-EM811816						110101				6 0.38268		110102				6-0.70711				EM811826	
6064-EM811826						110103				6 0.92388											
6065-MPC	1					8119	1			-1.		110100	1			1.00000				EM811911	
6066-EM811911						110101				1-1.00000		110102				1 1.00000				EM811921	
6067-EM811921						110103				1-1.00000											
6069-MPC	1					8119	2			-1.		110100	2			.0				EM811912	
6069-EM811912						110101				2 0.00000		110102				2-0.00000				EM811922	
6070-EM811922						110103				2 0.00000											
6071-MPC	1					8119	3			-1.		110100	3			1.00000				EM811913	
6072-EM811913						110101				3-1.00000		110102				3 1.00000				EM811923	
6073-EM811923						110103				3-1.00000											
6074-MPC	1					8119	4			-1.		110100	4			.0				EM811914	
6075-EM811914						110101				4 0.00000		110102				4-0.00000				EM811924	
6076-EM811924						110103				4 0.00000											
6077-MPC	1					8119	5			-1.		110100	5			1.00000				EM811915	
6078-EM811915						110101				5-1.00000		110102				5 1.00000				EM811925	
6079-EM811925						110103				5-1.00000											
6080-MPC	1					8119	6			-1.		110100	6			.0				EM811916	
6091-EM811916						110101				6 0.00000		110102				6-0.00000				EM811926	
6082-EM811926						110103				6 0.00000											
6083-MPC	1					8130	1			-1.		110200	1			1.00000				EM813011	
6084-EM813011						110201				1 1.00000		110202				1 1.00000				EM813021	
6085-EM813021						110203				1 1.00000											
6086-MPC	1					8130	2			-1.		110200	2			.0				EM813012	
6087-EM813012						110201				2 0.0		110202				2 0.0				EM813022	
6088-EM813022						110203				2 0.0											
6089-MPC	1					8130	3			-1.		110200	3			1.00000				EM813013	
6090-EM813013						110201				3 1.00000		110202				3 1.00000				EM813023	
6091-EM813023						110203				3 1.00000											
6092-MPC	1					8130	4			-1.		110200	4			.0				EM813014	
6093-EM813014						110201				4 0.0		110202				4 0.0				EM813024	
6094-EM813024						110203				4 0.0											
6095-MPC	1					8130	5			-1.		110200	5			1.00000				EM813015	
6096-EM813015						110201				5 1.00000		110202				5 1.00000				EM813025	
6097-EM813025						110203				5 1.00000											
6098-MPC	1					8130	6			-1.		110200	6			.0				EM813016	
6099-EM813016						110201				6 0.0		110202				6 0.0				EM813026	
6100-EM813026						110203				6 0.0											

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EXTERNAL TANK W. FLUID  
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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	2	3	4	5	6	7	8	9	10
6101- MPC	1	8131	1	-1.	110200	1	1.00000		EM813111	
6102- EM813111			110201	1 0.92388	110202		1 0.70711		EM813121	
6103- EM813121			110203	1 0.38268						
6104- MPC	1	8131	2	-1.	110200	2	.0		EM813112	
6105- EM813112			110201	2 0.38268	110202		2 0.70711		EM813122	
6106- EM813122			110203	2 0.92388						
6107- MPC	1	8131	3	-1.	110200	3	1.00000		EM813113	
6108- EM813113			110201	3 0.92388	110202		3 0.70711		EM813123	
6109- EM813123			110203	3 0.38268						
6110- MPC	1	8131	4	-1.	110200	4	.0		EM813114	
6111- EM813114			110201	4 0.38268	110202		4 0.70711		EM813124	
6112- EM813124			110203	4 0.92388						
6113- MPC	1	8131	5	-1.	110200	5	1.00000		EM813115	
6114- EM813115			110201	5 0.92388	110202		5 0.70711		EM813125	
6115- EM813125			110203	5 0.38268						
6116- MPC	1	8131	6	-1.	110200	6	.0		EM813116	
6117- EM813116			110201	6 0.38268	110202		6 0.70711		EM813126	
6118- EM813126			110203	6 0.92388						
6119- MPC	1	8132	1	-1.	110200	1	1.00000		EM813211	
6120- EM813211			110201	1 0.70711	110202		1 0.00000		EM813221	
6121- EM813221			110203	1-0.70711						
6122- MPC	1	8132	2	-1.	110200	2	.0		EM813212	
6123- EM813212			110201	2 0.70711	110202		2 1.00000		EM813222	
6124- EM813222			110203	2 0.70711						
6125- MPC	1	8132	3	-1.	110200	3	1.00000		EM813213	
6126- EM813213			110201	3 0.70711	110202		3 0.00000		EM813223	
6127- EM813223			110203	3-0.70711						
6128- MPC	1	8132	4	-1.	110200	4	.0		EM813214	
6129- EM813214			110201	4 0.70711	110202		4 1.00000		EM813224	
6130- EM813224			110203	4 0.70711						
6131- MPC	1	8132	5	-1.	110200	5	1.00000		EM813215	
6132- EM813215			110201	5 0.70711	110202		5 0.00000		EM813225	
6133- EM813225			110203	5-0.70711						
6134- MPC	1	8132	6	-1.	110200	6	.0		EM813216	
6135- EM813216			110201	6 0.70711	110202		6 1.00000		EM813226	
6136- EM813226			110203	6 0.70711						
6137- MPC	1	8133	1	-1.	110200	1	1.00000		EM813311	
6138- EM813311			110201	1 0.38268	110202		1-0.70711		EM813321	
6139- EM813321			110203	1-0.92388						
6140- MPC	1	8133	2	-1.	110200	2	.0		EM813312	
6141- EM813312			110201	2 0.92388	110202		2 0.70711		EM813322	
6142- EM813322			110203	2-0.38268						
6143- MPC	1	8133	3	-1.	110200	3	1.00000		EM813313	
6144- EM813313			110201	3 0.38268	110202		3-0.70711		EM813323	
6145- EM813323			110203	3-0.92388						
6146- MPC	1	8133	4	-1.	110200	4	.0		EM813314	
6147- EM813314			110201	4 0.92388	110202		4 0.70711		EM813324	
6148- EM813324			110203	4-0.38268						
6149- MPC	1	8133	5	-1.	110200	5	1.00000		EM813315	
6150- EM813315			110201	5 0.38268	110202		5-0.70711		EM813325	

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EXTERNAL TANK W. FLUID  
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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
6151-EM813325			110203		5-0.92388					
6152-MPC	1	8133	6		-1.	110200	6	.0		EM813316
6153-EM813316			110201		6 0.92388	110202		6 0.70711		EM813326
6154-EM813326			110203		6-0.38268					
6155-MPC	1	8135	1		-1.	110200	1	1.00000		EM813511
6156-EM813511			110201		1 0.00000	110202		1-1.00000		EM813521
6157-EM813521			110203		1-0.00000					
6158-MPC	1	8135	2		-1.	110200	2	.0		EM813512
6159-EM813512			110201		2 1.00000	110202		2 0.00000		EM813522
6160-EM813522			110203		2-1.00000					
6161-MPC	1	8135	3		-1.	110200	3	1.00000		EM813513
6162-EM813513			110201		3 0.00000	110202		3-1.00000		EM813523
6163-EM813523			110203		3-0.00000					
6164-MPC	1	8135	4		-1.	110200	4	.0		EM813514
6165-EM813514			110201		4 1.00000	110202		4 0.00000		EM813524
6166-EM813524			110203		4-1.00000					
6167-MPC	1	8135	5		-1.	110200	5	1.00000		EM813515
6168-EM813515			110201		5 0.00000	110202		5-1.00000		EM813525
6169-EM813525			110203		5-0.00000					
6170-MPC	1	8135	6		-1.	110200	6	.0		EM813516
6171-EM813516			110201		6 1.00000	110202		6 0.00000		EM813526
6172-EM813526			110203		6-1.00000					
6173-MPC	1	8136	1		-1.	110200	1	1.00000		EM813611
6174-EM813611			110201		1-0.38268	110202		1-0.70711		EM813621
6175-EM813621			110203		1 0.92388					
6176-MPC	1	8136	2		-1.	110200	2	.0		EM813612
6177-EM813612			110201		2 0.92388	110202		2-0.70711		EM813622
6178-EM813622			110203		2-0.38269					
6179-MPC	1	8136	3		-1.	110200	3	1.00000		EM813613
6180-EM813613			110201		3-0.38268	110202		3-0.70711		EM813623
6181-EM813623			110203		3 0.92388					
6182-MPC	1	8136	4		-1.	110200	4	.0		EM813614
6183-EM813614			110201		4 0.92388	110202		4-0.70711		EM813624
6184-EM813624			110203		4-0.38269					
6185-MPC	1	8136	5		-1.	110200	5	1.00000		EM813615
6186-EM813615			110201		5-0.38268	110202		5-0.70711		EM813625
6187-EM813625			110203		5 0.92388					
6188-MPC	1	8136	6		-1.	110200	6	.0		EM813616
6189-EM813616			110201		6 0.92388	110202		6-0.70711		EM813626
6190-EM813626			110203		6-0.38269					
6191-MPC	1	8137	1		-1.	110200	1	1.00000		EM813711
6192-EM813711			110201		1-0.70711	110202		1-0.00000		EM813721
6193-EM813721			110203		1 0.70711					
6194-MPC	1	8137	2		-1.	110200	2	.0		EM813712
6195-EM813712			110201		2 0.70711	110202		2-1.00000		EM813722
6196-EM813722			110203		2 0.70710					
6197-MPC	1	8137	3		-1.	110200	3	1.00000		EM813713
6198-EM813713			110201		3-0.70711	110202		3-0.00000		EM813723
6199-EM813723			110203		3 0.70711					
6200-MPC	1	8137	4		-1.	110200	4	.0		EM813714

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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
6201-EM813714	1	110201	4	0.70711	110202	4	-1.00000	EM813724		
6202-EM813724		110203	4	0.70710						
6203-MPC	1	8137	5	-1.	110200	5	1.00000	EM813715		
6204-EM813715		110201	5	-0.70711	110202	5	-0.00000	EM813725		
6205-EM813725		110203	5	0.70711						
6206-MPC	1	8137	6	-1.	110200	6	.0	EM813716		
6207-EM813716		110201	6	0.70711	110202	6	-1.00000	EM813726		
6208-EM813726		110203	6	0.70710						
6209-MPC	1	8138	1	-1.	110200	1	1.00000	EM813811		
6210-EM813811		110201	1	-0.92388	110202	1	0.70711	EM813821		
6211-EM813821		110203	1	-0.38268						
6212-MPC	1	8138	2	-1.	110200	2	.0	EM813812		
6213-EM813812		110201	2	0.38268	110202	2	-0.70711	EM813822		
6214-EM813822		110203	2	0.92388						
6215-MPC	1	8138	3	-1.	110200	3	1.00000	EM813813		
6216-EM813813		110201	3	-0.92388	110202	3	0.70711	EM813823		
6217-EM813823		110203	3	-0.38268						
6218-MPC	1	8138	4	-1.	110200	4	.0	EM813814		
6219-EM813814		110201	4	0.38268	110202	4	-0.70711	EM813824		
6220-EM813824		110203	4	0.92388						
6221-MPC	1	8138	5	-1.	110200	5	1.00000	EM813815		
6222-EM813815		110201	5	-0.92388	110202	5	0.70711	EM813825		
6223-EM813825		110203	5	-0.38268						
6224-MPC	1	8138	6	-1.	110200	6	.0	EM813816		
6225-EM813816		110201	6	0.38268	110202	6	-0.70711	EM813826		
6226-EM813826		110203	6	0.92388						
6227-MPC	1	8139	1	-1.	110200	1	1.00000	EM813911		
6228-EM813911		110201	1	-1.00000	110202	1	1.00000	EM813921		
6229-EM813921		110203	1	-1.00000						
6230-MPC	1	8139	2	-1.	110200	2	.0	EM813912		
6231-EM813912		110201	2	0.00000	110202	2	-0.00000	EM813922		
6232-EM813922		110203	2	0.00000						
6233-MPC	1	8139	3	-1.	110200	3	1.00000	EM813913		
6234-EM813913		110201	3	-1.00000	110202	3	1.00000	EM813923		
6235-EM813923		110203	3	-1.00000						
6236-MPC	1	8139	4	-1.	110200	4	.0	EM813914		
6237-EM813914		110201	4	0.00000	110202	4	-0.00000	EM813924		
6238-EM813924		110203	4	0.00000						
6239-MPC	1	8139	5	-1.	110200	5	1.00000	EM813915		
6240-EM813915		110201	5	-1.00000	110202	5	1.00000	EM813925		
6241-EM813925		110203	5	-1.00000						
6242-MPC	1	8139	6	-1.	110200	6	.0	EM813916		
6243-EM813916		110201	6	0.00000	110202	6	-0.00000	EM813926		
6244-EM813926		110203	6	0.00000						
6245-MPC	1	8140	1	1.	8134	3	-1.			
6246-MPC	1	8140	3	1.	8134	1	.197328	EM81402		
6247-EM81402		8134	2	-.980338						
6248-MPC	1	8150	1	-1.	110300	1	1.00000	EM815011		
6249-EM815011		110301	1	1.00000	110302	1	1.00000	EM815021		
6250-EM815021		110303	1	1.00000						

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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
6251-MPC	1	8150	2	-1.	110300	2	.0			EM815012
6252-EM815012		110301		2 0.0	110302		2 0.0			EM815022
6253-EM815022		110303		2 0.0						
6254-MPC	1	8150	3	-1.	110300	3	1.00000			EM815013
6255-EM815013		110301		3 1.00000	110302		3 1.00000			EM815023
6256-EM815023		110303		3 1.00000						
6257-MPC	1	8150	4	-1.	110300	4	.0			EM815014
6258-EM815014		110301		4 0.0	110302		4 0.0			EM815024
6259-EM815024		110303		4 0.0						
6260-MPC	1	8150	5	-1.	110300	5	1.00000			EM815015
6261-EM815015		110301		5 1.00000	110302		5 1.00000			EM815025
6262-EM815025		110303		5 1.00000						
6263-MPC	1	8150	6	-1.	110300	6	.0			EM815016
6264-EM815016		110301		6 0.0	110302		6 0.0			EM815026
6265-EM815026		110303		6 0.0						
6266-MPC	1	8151	1	-1.	110300	1	1.00000			EM815111
6267-EM815111		110301		1 0.92388	110302		1 0.70711			EM815121
6268-EM815121		110303		1 0.38268						
6269-MPC	1	8151	2	-1.	110300	2	.0			EM815112
6270-EM815112		110301		2 0.38268	110302		2 0.70711			EM815122
6271-EM815122		110303		2 0.92388						
6272-MPC	1	8151	3	-1.	110300	3	1.00000			EM815113
6273-EM815113		110301		3 0.92388	110302		3 0.70711			EM815123
6274-EM815123		110303		3 0.38268						
6275-MPC	1	8151	4	-1.	110300	4	.0			EM815114
6276-EM815114		110301		4 0.38268	110302		4 0.70711			EM815124
6277-EM815124		110303		4 0.92388						
6278-MPC	1	8151	5	-1.	110300	5	1.00000			EM815115
6279-EM815115		110301		5 0.92388	110302		5 0.70711			EM815125
6280-EM815125		110303		5 0.38268						
6281-MPC	1	8151	6	-1.	110300	6	.0			EM815116
6282-EM815116		110301		6 0.38268	110302		6 0.70711			EM815126
6283-EM815126		110303		6 0.92388						
6284-MPC	1	8152	1	-1.	110300	1	1.00000			EM815211
6285-EM815211		110301		1 0.70711	110302		1 0.00000			EM815221
6286-EM815221		110303		1-0.70711						
6287-MPC	1	8152	2	-1.	110300	2	.0			EM815212
6288-EM815212		110301		2 0.70711	110302		2 1.00000			EM815222
6289-EM815222		110303		2 0.70711						
6290-MPC	1	8152	3	-1.	110300	3	1.00000			EM815213
6291-EM815213		110301		3 0.70711	110302		3 0.00000			EM815223
6292-EM815223		110303		3-0.70711						
6293-MPC	1	8152	4	-1.	110300	4	.0			EM815214
6294-EM815214		110301		4 0.70711	110302		4 1.00000			EM815224
6295-EM815224		110303		4 0.70711						
6296-MPC	1	8152	5	-1.	110300	5	1.00000			EM815215
6297-EM815215		110301		5 0.70711	110302		5 0.00000			EM815225
6298-EM815225		110303		5-0.70711						
6299-MPC	1	8152	6	-1.	110300	6	.0			EM815216
6300-EM815216		110301		6 0.70711	110302		6 1.00000			EM815226

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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
5301-EM815226			110303		6	0.70711				
6302-MPC	1		8153	1	-1.	110300	1	1.00000		EM815311
6303-EM815311			110301		1	0.38268	110302	1-0.70711		EM815321
6304-EM815321			110303		1	-0.92388				
6305-MPC	1		8153	2	-1.	110300	2	.0		EM815312
6306-EM815312			110301		2	0.92388	110302	2 0.70711		EM815322
6307-EM815322			110303		2	-0.38268				
6308-MPC	1		8153	3	-1.	110300	3	1.00000		EM815313
6309-EM815313			110301		3	0.38268	110302	3-0.70711		EM815323
6310-EM815323			110303		3	-0.92388				
6311-MPC	1		8153	4	-1.	110300	4	.0		EM815314
6312-EM815314			110301		4	0.92388	110302	4 0.70711		EM815324
6313-EM815324			110303		4	-0.38268				
6314-MPC	1		8153	5	-1.	110300	5	1.00000		EM815315
6315-EM815315			110301		5	0.38268	110302	5-0.70711		EM815325
6316-EM815325			110303		5	-0.92388				
6317-MPC	1		8153	6	-1.	110300	6	.0		EM815316
6318-EM815316			110301		6	0.92388	110302	6 0.70711		EM815326
6319-EM815326			110303		6	-0.38268				
6320-MPC	1		8154	1	-1.	110300	1	1.00000		EM815411
6321-EM815411			110301		1	0.19732	110302	1-0.92213		EM815421
6322-EM815421			110303		1	-0.56122				
6323-MPC	1		8154	2	-1.	110300	2	.0		EM815412
6324-EM815412			110301		2	0.98034	110302	2 0.38687		EM815422
6325-EM815422			110303		2	-0.82767				
6326-MPC	1		8154	3	-1.	110300	3	1.00000		EM815413
6327-EM815413			110301		3	0.19732	110302	3-0.92213		EM815423
6328-EM815423			110303		3	-0.56122				
6329-MPC	1		8154	4	-1.	110300	4	.0		EM815414
6330-EM815414			110301		4	0.98034	110302	4 0.38687		EM815424
6331-EM815424			110303		4	-0.82767				
6332-MPC	1		8154	5	-1.	110300	5	1.00000		EM815415
6333-EM815415			110301		5	0.19732	110302	5-0.92213		EM815425
6334-EM815425			110303		5	-0.56122				
6335-MPC	1		8154	6	-1.	110300	6	.0		EM815416
6336-EM815416			110301		6	0.98034	110302	6 0.38687		EM815426
6337-EM815426			110303		6	-0.82767				
6338-MPC	1		8155	1	-1.	110300	1	1.00000		EM815511
6339-EM815511			110301		1	0.00000	110302	1-1.00000		EM815521
6340-EM815521			110303		1	-0.00000				
6341-MPC	1		8155	2	-1.	110300	2	.0		EM815512
6342-EM815512			110301		2	1.00000	110302	2 0.00000		EM815522
6343-EM815522			110303		2	-1.00000				
6344-MPC	1		8155	3	-1.	110300	3	1.00000		EM815513
6345-EM815513			110301		3	0.00000	110302	3-1.00000		EM815523
6346-EM815523			110303		3	-0.00000				
6347-MPC	1		8155	4	-1.	110300	4	.0		EM815514
6348-EM815514			110301		4	1.00000	110302	4 0.00000		EM815524
6349-EM815524			110303		4	-1.00000				
6350-MPC	1		8155	5	-1.	110300	5	1.00000		EM815515

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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
CJUNT.	1	..	2	..	3	..	4	..	5	..
6351-EM815515			110301		5 0.00000	110302		5-1.00000		EM815525
6352-EM815525			110303		5-0.00000					
6353-MPC	1		8155	6	-1.	110300	6	.0		EM815516
6354-EM815516			110301		6 1.00000	110302		6 0.00000		EM815526
6355-EM815526			110303		6-1.00000					
6356-MPC	1		8156	1	-1.	110300	1	1.00000		EM815611
6357-EM815611			110301		1-0.38268	110302		1-0.70711		EM815621
6358-EM815621			110303		1 0.92388					
6359-MPC	1		8156	2	-1.	110300	2	.0		EM815612
6360-EM815612			110301		2 0.92388	110302		2-0.70711		EM815622
6361-EM815622			110303		2-0.38269					
6362-MPC	1		8156	3	-1.	110300	3	1.00000		EM815613
6363-EM815613			110301		3-0.38268	110302		3-0.70711		EM815623
6364-EM815623			110303		3 0.92388					
6365-MPC	1		8156	4	-1.	110300	4	.0		EM815614
6366-EM815614			110301		4 0.92388	110302		4-0.70711		EM815624
6367-EM815624			110303		4-0.38269					
6369-MPC	1		8156	5	-1.	110300	5	1.00000		EM815615
6369-EM815615			110301		5-0.38268	110302		5-0.70711		EM815625
6370-EM815625			110303		5 0.92388					
6371-MPC	1		8156	6	-1.	110300	6	.0		EM815616
6372-EM815616			110301		6 0.92388	110302		6-0.70711		EM815626
6373-EM815626			110303		6-0.38269					
6374-MPC	1		8157	1	-1.	110300	1	1.00000		EM815711
6375-EM815711			110301		1-0.70711	110302		1-0.00000		EM815721
6376-EM815721			110303		1 0.70711					
6377-MPC	1		8157	2	-1.	110300	2	.0		EM815712
6378-EM815712			110301		2 0.70711	110302		2-1.00000		EM815722
6379-EM815722			110303		2 0.70710					
6380-MPC	1		8157	3	-1.	110300	3	1.00000		EM815713
6381-EM815713			110301		3-0.70711	110302		3-0.00000		EM815723
6382-EM815723			110303		3 0.70711					
6383-MPC	1		8157	4	-1.	110300	4	.0		EM815714
6384-EM815714			110301		4 0.70711	110302		4-1.00000		EM815724
6385-EM815724			110303		4 0.70710					
6386-MPC	1		8157	5	-1.	110300	5	1.00000		EM815715
6387-EM815715			110301		5-0.70711	110302		5-0.00000		EM815725
6388-EM815725			110303		5 0.70711					
6389-MPC	1		8157	6	-1.	110300	6	.0		EM815716
6390-EM815716			110301		6 0.70711	110302		6-1.00000		EM815726
6391-EM815726			110303		6 0.70710					
6392-MPC	1		8158	1	-1.	110300	1	1.00000		EM815811
6393-EM815811			110301		1-0.92388	110302		1 0.70711		EM815821
6394-EM815821			110303		1-0.38268					
6395-MPC	1		8158	2	-1.	110300	2	.0		EM815812
6396-EM815812			110301		2 0.38268	110302		2-0.70711		EM815822
6397-EM815822			110303		2 0.92388					
6398-MPC	1		8158	3	-1.	110300	3	1.00000		EM815813
6399-EM815813			110301		3-0.92388	110302		3 0.70711		EM815823
6400-EM815823			110303		3-0.38268					

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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
6401-MPC	1	8158	4	-1.	110300	4	.0			EM815814	
6402-EM815814		110301		4	0.38268	110302	4-0.70711			EM815824	
6403-EM815824		110303		4	0.92388						
6404-MPC	1	8158	5	-1.	110300	5	1.00000			EM815815	
6405-EM815815		110301		5-0.92388	110302		5 0.70711			EM815825	
6406-EM815825		110303		5-0.38268							
6407-MPC	1	8158	6	-1.	110300	6	.0			EM815816	
6408-EM815816		110301		6 0.38268	110302		6-0.70711			EM815826	
6409-EM815826		110303		6 0.92388							
6410-MPC	1	8159	1	-1.	110300	1	1.00000			EM815911	
6411-EM815911		110301		1-1.00000	110302		1 1.00000			EM815921	
6412-EM815921		110303		1-1.00000							
6413-MPC	1	8159	2	-1.	110300	2	.0			EM815912	
6414-EM815912		110301		2 0.00000	110302		2-0.00000			EM815922	
6415-EM815922		110303		2 0.00000							
6416-MPC	1	8159	3	-1.	110300	3	1.00000			EM815913	
6417-EM815913		110301		3-1.00000	110302		3 1.00000			EM815923	
6418-EM815923		110303		3-1.00000							
6419-MPC	1	8159	4	-1.	110300	4	.0			EM815914	
6420-EM815914		110301		4 0.00000	110302		4-0.00000			EM815924	
6421-EM815924		110303		4 0.00000							
6422-MPC	1	8159	5	-1.	110300	5	1.00000			EM815915	
6423-EM815915		110301		5-1.00000	110302		5 1.00000			EM815925	
6424-EM815925		110303		5-1.00000							
6425-MPC	1	8159	6	-1.	110300	6	.0			EM815916	
6426-EM815916		110301		6 0.00000	110302		6-0.00000			EM815926	
6427-EM815926		110303		6 0.00000							
6428-MPC	1	8170	1	-1.	110500	1	1.00000			EM817011	
6429-EM817011		110501		1 1.00000	110502		1 1.00000			EM817021	
6430-EM817021		110503		1 1.00000							
6431-MPC	1	8170	2	-1.	110500	2	.0			EM817012	
6432-EM817012		110501		2 0.0	110502		2 0.0			EM817022	
6433-EM817022		110503		2 0.0							
6434-MPC	1	8170	3	-1.	110500	3	1.00000			EM817013	
6435-EM817013		110501		3 1.00000	110502		3 1.00000			EM817023	
6436-EM817023		110503		3 1.00000							
6437-MPC	1	8170	4	-1.	110500	4	.0			EM817014	
6438-EM817014		110501		4 0.0	110502		4 0.0			EM817024	
6439-EM817024		110503		4 0.0							
6440-MPC	1	8170	5	-1.	110500	5	1.00000			EM817015	
6441-EM817015		110501		5 1.00000	110502		5 1.00000			EM817025	
6442-EM817025		110503		5 1.00000							
6443-MPC	1	8170	6	-1.	110500	6	.0			EM817016	
6444-EM817016		110501		6 0.0	110502		6 0.0			EM817026	
6445-EM817026		110503		6 0.0							
6446-MPC	1	8171	1	-1.	110500	1	1.00000			EM817111	
6447-EM817111		110501		1 0.92388	110502		1 0.70711			EM817121	
6448-EM817121		110503		1 0.38268							
6449-MPC	1	8171	2	-1.	110500	2	.0			EM817112	
6450-EM817112		110501		2 0.38268	110502		2 0.70711			EM817122	



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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
6451- EM817122				110503		2 0.92388					
6452- MPC	1		8171	3		-1.	110500	3	1.00000		EM817113
6453- EM817113				110501		3 0.92388	110502		3 0.70711		EM817123
6454- EM817123				110503		3 0.38268					
6455- MPC	1		8171	4		-1.	110500	4	.0		EM817114
6456- EM817114				110501		4 0.38268	110502		4 0.70711		EM817124
6457- EM817124				110503		4 0.92388					
6458- MPC	1		8171	5		-1.	110500	5	1.00000		EM817115
6459- EM817115				110501		5 0.92388	110502		5 0.70711		EM817125
6460- EM817125				110503		5 0.38268					
6461- MPC	1		8171	6		-1.	110500	6	.0		EM817116
6462- EM817116				110501		6 0.38268	110502		6 0.70711		EM817126
6463- EM817126				110503		6 0.92388					
6464- MPC	1		8172	1		-1.	110500	1	1.00000		EM817211
6465- EM817211				110501		1 0.70711	110502		1 0.00000		EM817221
6466- EM817221				110503		1-0.70711					
6467- MPC	1		8172	2		-1.	110500	2	.0		EM817212
6468- EM817212				110501		2 0.70711	110502		2 1.00000		EM817222
6469- EM817222				110503		2 0.70711					
6470- MPC	1		8172	3		-1.	110500	3	1.00000		EM817213
6471- EM817213				110501		3 0.70711	110502		3 0.00000		EM817223
6472- EM817223				110503		3-0.70711					
6473- MPC	1		8172	4		-1.	110500	4	.0		EM817214
6474- EM817214				110501		4 0.70711	110502		4 1.00000		EM817224
6475- EM817224				110503		4 0.70711					
6476- MPC	1		8172	5		-1.	110500	5	1.00000		EM817215
6477- EM817215				110501		5 0.70711	110502		5 0.00000		EM817225
6478- EM817225				110503		5-0.70711					
6479- MPC	1		8172	6		-1.	110500	6	.0		EM817216
6480- EM817216				110501		6 0.70711	110502		6 1.00000		EM817226
6481- EM817226				110503		6 0.70711					
6482- MPC	1		8173	1		-1.	110500	1	1.00000		EM817311
6483- EM817311				110501		1 0.38268	110502		1-0.70711		EM817321
6484- EM817321				110503		1-0.92388					
6485- MPC	1		8173	2		-1.	110500	2	.0		EM817312
6486- EM817312				110501		2 0.92388	110502		2 0.70711		EM817322
6487- EM817322				110503		2-0.38268					
6488- MPC	1		8173	3		-1.	110500	3	1.00000		EM817313
6489- EM817313				110501		3 0.38268	110502		3-0.70711		EM817323
6490- EM817323				110503		3-0.92388					
6491- MPC	1		8173	4		-1.	110500	4	.0		EM817314
6492- EM817314				110501		4 0.92388	110502		4 0.70711		EM817324
6493- EM817324				110503		4-0.38268					
6494- MPC	1		8173	5		-1.	110500	5	1.00000		EM817315
6495- EM817315				110501		5 0.38268	110502		5-0.70711		EM817325
6496- EM817325				110503		5-0.92388					
6497- MPC	1		8173	6		-1.	110500	6	.0		EM817316
6498- EM817316				110501		6 0.92388	110502		6 0.70711		EM817326
6499- EM817326				110503		6-0.38268					
6500- MPC	1		8174	1		-1.	110500	1	1.00000		EM817411

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
6501-EM817411				110501		1 0.00000	110502		1-1.00000		EM817421
6502-EM817421				110503		1-0.00000					
6503-MPC	1		8174	2		-1.	110500	2	.0		EM817412
6504-EM817412				110501		2 1.00000	110502		2 0.00000		EM817422
6505-EM817422				110503		2-1.00000					
6506-MPC	1		8174	3		-1.	110500	3	1.00000		EM817413
6507-EM817413				110501		3 0.00000	110502		3-1.00000		EM817423
6508-EM817423				110503		3-0.00000					
6509-MPC	1		8174	4		-1.	110500	4	.0		EM817414
6510-EM817414				110501		4 1.00000	110502		4 0.00000		EM817424
6511-EM817424				110503		4-1.00000					
6512-MPC	1		8174	5		-1.	110500	5	1.00000		EM817415
6513-EM817415				110501		5 0.00000	110502		5-1.00000		EM817425
6514-EM817425				110503		5-0.00000					
6515-MPC	1		8174	6		-1.	110500	6	.0		EM817416
6516-EM817416				110501		6 1.00000	110502		6 0.00000		EM817426
6517-EM817426				110503		6-1.00000					
6518-MPC	1		8175	1		-1.	110500	1	1.00000		EM817511
6519-EM817511				110501		1-0.38268	110502		1-0.70711		EM817521
6520-EM817521				110503		1 0.92388					
6521-MPC	1		8175	2		-1.	110500	2	.0		EM817512
6522-EM817512				110501		2 0.92388	110502		2-0.70711		EM817522
6523-EM817522				110503		2-0.38269					
6524-MPC	1		8175	3		-1.	110500	3	1.00000		EM817513
6525-EM817513				110501		3-0.38268	110502		3-0.70711		EM817523
6526-EM817523				110503		3 0.92388					
6527-MPC	1		8175	4		-1.	110500	4	.0		EM817514
6528-EM817514				110501		4 0.92388	110502		4-0.70711		EM817524
6529-EM817524				110503		4-0.38269					
6530-MPC	1		8175	5		-1.	110500	5	1.00000		EM817515
6531-EM817515				110501		5-0.38268	110502		5-0.70711		EM817525
6532-EM817525				110503		5 0.92388					
6533-MPC	1		8175	6		-1.	110500	6	.0		EM817516
6534-EM817516				110501		6 0.92388	110502		6-0.70711		EM817526
6535-EM817526				110503		6-0.38269					
6536-MPC	1		8176	1		-1.	110500	1	1.00000		EM817611
6537-EM817611				110501		1-0.70711	110502		1-0.00000		EM817621
6538-EM817621				110503		1 0.70711					
6539-MPC	1		8176	2		-1.	110500	2	.0		EM817612
6540-EM817612				110501		2 0.70711	110502		2-1.00000		EM817622
6541-EM817622				110503		2 0.70710					
6542-MPC	1		8176	3		-1.	110500	3	1.00000		EM817613
6543-EM817613				110501		3-0.70711	110502		3-0.00000		EM817623
6544-EM817623				110503		3 0.70711					
6545-MPC	1		8176	4		-1.	110500	4	.0		EM817614
6546-EM817614				110501		4 0.70711	110502		4-1.00000		EM817624
6547-EM817624				110503		4 0.70710					
6548-MPC	1		8176	5		-1.	110500	5	1.00000		EM817615
6549-EM817615				110501		5-0.70711	110502		5-0.00000		EM817625
6550-EM817625				110503		5 0.70711					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
6551- MPC	1	8176	6	-1.	110500	6	.0				EM817616
6552- EM817616		110501		6 0.70711	110502		6-1.00000				EM817626
6553- EM817626		110503		6 0.70710							
6554- MPC	1	8177	1	-1.	110500	1	1.00000				EM817711
6555- EM817711		110501		1-0.92388	110502		1 0.70711				EM817721
6556- EM817721		110503		1-0.38268							
6557- MPC	1	8177	2	-1.	110500	2	.0				EM817712
6558- EM817712		110501		2 0.38268	110502		2-0.70711				EM817722
6559- EM817722		110503		2 0.92388							
6560- MPC	1	8177	3	-1.	110500	3	1.00000				EM817713
6561- EM817713		110501		3-0.92388	110502		3 0.70711				EM817723
6562- EM817723		110503		3-0.38268							
6563- MPC	1	8177	4	-1.	110500	4	.0				EM817714
6564- EM817714		110501		4 0.38268	110502		4-0.70711				EM817724
6565- EM817724		110503		4 0.92388							
6566- MPC	1	8177	5	-1.	110500	5	1.00000				EM817715
6567- EM817715		110501		5-0.92388	110502		5 0.70711				EM817725
6568- EM817725		110503		5-0.38268							
6569- MPC	1	8177	6	-1.	110500	6	.0				EM817716
6570- EM817716		110501		6 0.38268	110502		6-0.70711				EM817726
6571- EM817726		110503		6 0.92388							
6572- MPC	1	8178	1	-1.	110500	1	1.00000				EM817811
6573- EM817811		110501		1-1.00000	110502		1 1.00000				EM817821
6574- EM817821		110503		1-1.00000							
6575- MPC	1	8178	2	-1.	110500	2	.0				EM817812
6576- EM817812		110501		2 0.00000	110502		2-0.00000				EM817822
6577- EM817822		110503		2 0.00000							
6578- MPC	1	8178	3	-1.	110500	3	1.00000				EM817813
6579- EM817813		110501		3-1.00000	110502		3 1.00000				EM817823
6580- EM817823		110503		3-1.00000							
6581- MPC	1	8178	4	-1.	110500	4	.0				EM817814
6582- EM817814		110501		4 0.00000	110502		4-0.00000				EM817824
6583- EM817824		110503		4 0.00000							
6584- MPC	1	8178	5	-1.	110500	5	1.00000				EM817815
6585- EM817815		110501		5-1.00000	110502		5 1.00000				EM817825
6586- EM817825		110503		5-1.00000							
6587- MPC	1	8178	6	-1.	110500	6	.0				EM817816
6588- EM817816		110501		6 0.00000	110502		6-0.00000				EM817826
6589- EM817826		110503		6 0.00000							
6590- MPC	1	8190	1	-1.	110600	1	1.00000				EM819011
6591- EM819011		110601		1 1.00000	110602		1 1.00000				EM819021
6592- EM819021		110603		1 1.00000							
6593- MPC	1	8190	2	-1.	110600	2	.0				EM819012
6594- EM819012		110601		2 0.0	110602		2 0.0				EM819022
6595- EM819022		110603		2 0.0							
6596- MPC	1	8190	3	-1.	110600	3	1.00000				EM819013
6597- EM819013		110601		3 1.00000	110602		3 1.00000				EM819023
6598- EM819023		110603		3 1.00000							
6599- MPC	1	8190	4	-1.	110600	4	.0				EM819014
6600- EM819014		110601		4 0.0	110602		4 0.0				EM819024

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
6601- EM819024				110603		4 0.0					
6602- MPC	1		8190	5		-1.	110600	5	1.00000		EM819015
6603- EM819015				110601		5 1.00000	110602		5 1.00000		EM819025
6604- EM819025				110603		5 1.00000					
6605- MPC	1		8190	6		-1.	110600	6	.0		EM819016
6606- EM819016				110601		6 0.0	110602		6 0.0		EM819026
6607- EM819026				110603		6 0.0					
6609- MPC	1		8191	1		-1.	110600	1	1.00000		EM819111
6609- EM819111				110601		1 0.92388	110602		1 0.70711		EM819121
6610- EM819121				110603		1 0.38268					
6611- MPC	1		8191	2		-1.	110600	2	.0		EM819112
6612- EM819112				110601		2 0.38268	110602		2 0.70711		EM819122
6613- EM819122				110603		2 0.92388					
6614- MPC	1		8191	3		-1.	110600	3	1.00000		EM819113
6615- EM819113				110601		3 0.92388	110602		3 0.70711		EM819123
6616- EM819123				110603		3 0.38268					
6617- MPC	1		8191	4		-1.	110600	4	.0		EM819114
6618- EM819114				110601		4 0.38268	110602		4 0.70711		EM819124
6619- EM819124				110603		4 0.92388					
6620- MPC	1		8191	5		-1.	110600	5	1.00000		EM819115
6621- EM819115				110601		5 0.92388	110602		5 0.70711		EM819125
6622- EM819125				110603		5 0.38268					
6623- MPC	1		8191	6		-1.	110600	6	.0		EM819116
6624- EM819116				110601		6 0.38268	110602		6 0.70711		EM819126
6625- EM819126				110603		6 0.92388					
6626- MPC	1		8192	1		-1.	110600	1	1.00000		EM819211
6627- EM819211				110601		1 0.70711	110602		1 0.00000		EM819221
6629- EM819221				110603		1-0.70711					
6629- MPC	1		8192	2		-1.	110600	2	.0		EM819212
6630- EM819212				110601		2 0.70711	110602		2 1.00000		EM819222
6631- EM819222				110603		2 0.70711					
6632- MPC	1		8192	3		-1.	110600	3	1.00000		EM819213
6633- EM819213				110601		3 0.70711	110602		3 0.00000		EM819223
6634- EM819223				110603		3-0.70711					
6635- MPC	1		8192	4		-1.	110600	4	.0		EM819214
6636- EM819214				110601		4 0.70711	110602		4 1.00000		EM819224
6637- EM819224				110603		4 0.70711					
6638- MPC	1		8192	5		-1.	110600	5	1.00000		EM819215
6639- EM819215				110601		5 0.70711	110602		5 0.00000		EM819225
6640- EM819225				110603		5-0.70711					
6641- MPC	1		8192	6		-1.	110600	6	.0		EM819216
6642- EM819216				110601		6 0.70711	110602		6 1.00000		EM819226
6643- EM819226				110603		6 0.70711					
6644- MPC	1		8193	1		-1.	110600	1	1.00000		EM819311
6645- EM819311				110601		1 0.38268	110602		1-0.70711		EM819321
6646- EM819321				110603		1-0.92388					
6647- MPC	1		8193	2		-1.	110600	2	.0		EM819312
6649- EM819312				110601		2 0.92388	110602		2 0.70711		EM819322
6649- EM819322				110603		2-0.38268					
6650- MPC	1		8193	3		-1.	110600	3	1.00000		EM819313

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
6651- EM819313				110601		3 0.38268	110602		3-0.70711		EM819323
6652- EM819323				110603		3-0.92388					
6653- MPC	1		8193	4		-1.	110600 4		.0		EM819314
6654- EM819314				110601		4 0.92388	110602		4 0.70711		EM819324
6655- EM819324				110603		4-0.38268					
6656- MPC	1		8193	5		-1.	110600 5		1.00000		EM819315
6657- EM819315				110601		5 0.38268	110602		5-0.70711		EM819325
6659- EM819325				110603		5-0.92388					
6659- MPC	1		8193	6		-1.	110600 6		.0		EM819316
6660- EM819316				110601		6 0.92388	110602		6 0.70711		EM819326
6661- EM819326				110603		6-0.38268					
6662- MPC	1		8194	1		-1.	110600 1		1.00000		EM819411
6663- EM819411				110601		1 0.00000	110602		1-1.00000		EM819421
6664- EM819421				110603		1-0.00000					
6665- MPC	1		8194	2		-1.	110600 2		.0		EM819412
6666- EM819412				110601		2 1.00000	110602		2 0.00000		EM819422
6667- EM819422				110603		2-1.00000					
6668- MPC	1		8194	3		-1.	110600 3		1.00000		EM819413
6669- EM819413				110601		3 0.00000	110602		3-1.00000		EM819423
6670- EM819423				110603		3-0.00000					
6671- MPC	1		8194	4		-1.	110600 4		.0		EM819414
6672- EM819414				110601		4 1.00000	110602		4 0.00000		EM819424
6673- EM819424				110603		4-1.00000					
6674- MPC	1		8194	5		-1.	110600 5		1.00000		EM819415
6675- EM819415				110601		5 0.00000	110602		5-1.00000		EM819425
6676- EM819425				110603		5-0.00000					
6677- MPC	1		8194	6		-1.	110600 6		.0		EM819416
6679- EM819416				110601		6 1.00000	110602		6 0.00000		EM819426
6679- EM819426				110603		6-1.00000					
6680- MPC	1		8195	1		-1.	110600 1		1.00000		EM819511
6681- EM819511				110601		1-0.38268	110602		1-0.70711		EM819521
6682- EM819521				110603		1 0.92388					
6683- MPC	1		8195	2		-1.	110600 2		.0		EM819512
6684- EM819512				110601		2 0.92388	110602		2-0.70711		EM819522
6685- EM819522				110603		2-0.38269					
6686- MPC	1		8195	3		-1.	110600 3		1.00000		EM819513
6687- EM819513				110601		3-0.38268	110602		3-0.70711		EM819523
6689- EM819523				110603		3 0.92388					
6689- MPC	1		8195	4		-1.	110600 4		.0		EM819514
6690- EM819514				110601		4 0.92388	110602		4-0.70711		EM819524
6691- EM819524				110603		4-0.38269					
6692- MPC	1		8195	5		-1.	110600 5		1.00000		EM819515
6693- EM819515				110601		5-0.38268	110602		5-0.70711		EM819525
6694- EM819525				110603		5 0.92388					
6695- MPC	1		8195	6		-1.	110600 6		.0		EM819516
6695- EM819516				110601		6 0.92388	110602		6-0.70711		EM819526
6697- EM819526				110603		6-0.38269					
6698- MPC	1		8196	1		-1.	110600 1		1.00000		EM819611
6699- EM819611				110601		1-0.70711	110602		1-0.00000		EM819621
6700- EM819621				110603		1 0.70711					

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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
5701-MPC	1	8196	2	-1.	110600	2	.0			EM819612	
6702-EM819612		110601		2 0.70711	110602		2-1.00000			EM819622	
6703-EM819622		110603		2 0.70710							
6704-MPC	1	8196	3	-1.	110600	3	1.00000			EM819613	
6705-EM819613		110601		3-0.70711	110602		3-0.00000			EM819623	
6706-EM819623		110603		3 0.70711							
6707-MPC	1	8196	4	-1.	110600	4	.0			EM819614	
6708-EM819614		110601		4 0.70711	110602		4-1.00000			EM819624	
6709-EM819624		110603		4 0.70710							
6710-MPC	1	8196	5	-1.	110600	5	1.00000			EM819615	
6711-EM819615		110601		5-0.70711	110602		5-0.00000			EM819625	
6712-EM819625		110603		5 0.70711							
6713-MPC	1	8196	6	-1.	110600	6	.0			EM819616	
6714-EM819616		110601		6 0.70711	110602		6-1.00000			EM819626	
6715-EM819626		110603		6 0.70710							
6716-MPC	1	8197	1	-1.	110600	1	1.00000			EM819711	
6717-EM819711		110601		1-0.92388	110602		1 0.70711			EM819721	
6718-EM819721		110603		1-0.38268							
6719-MPC	1	8197	2	-1.	110600	2	.0			EM819712	
6720-EM819712		110601		2 0.38268	110602		2-0.70711			EM819722	
6721-EM819722		110603		2 0.92388							
6722-MPC	1	8197	3	-1.	110600	3	1.00000			EM819713	
6723-EM819713		110601		3-0.92388	110602		3 0.70711			EM819723	
6724-EM819723		110603		3-0.38268							
6725-MPC	1	8197	4	-1.	110600	4	.0			EM819714	
6726-EM819714		110601		4 0.38268	110602		4-0.70711			EM819724	
6727-EM819724		110603		4 0.92388							
6728-MPC	1	8197	5	-1.	110600	5	1.00000			EM819715	
6729-EM819715		110601		5-0.92388	110602		5 0.70711			EM819725	
6730-EM819725		110603		5-0.38268							
6731-MPC	1	8197	6	-1.	110600	6	.0			EM819716	
6732-EM819716		110601		6 0.38268	110602		6-0.70711			EM819726	
6733-EM819726		110603		6 0.92388							
6734-MPC	1	8198	1	-1.	110600	1	1.00000			EM819811	
6735-EM819811		110601		1-1.00000	110602		1 1.00000			EM819821	
6736-EM819821		110603		1-1.00000							
6737-MPC	1	8198	2	-1.	110600	2	.0			EM819812	
6738-EM819812		110601		2 0.00000	110602		2-0.00000			EM819822	
6739-EM819822		110603		2 0.00000							
6740-MPC	1	8198	3	-1.	110600	3	1.00000			EM819813	
6741-EM819813		110601		3-1.00000	110602		3 1.00000			EM819823	
6742-EM819823		110603		3-1.00000							
6743-MPC	1	8198	4	-1.	110600	4	.0			EM819814	
6744-EM819814		110601		4 0.00000	110602		4-0.00000			EM819824	
6745-EM819824		110603		4 0.00000							
6746-MPC	1	8198	5	-1.	110600	5	1.00000			EM819815	
6747-EM819815		110601		5-1.00000	110602		5 1.00000			EM819825	
6748-EM819825		110603		5-1.00000							
6749-MPC	1	8198	6	-1.	110600	6	.0			EM819816	
6750-EM819816		110601		6 0.00000	110602		6-0.00000			EM819826	

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	..	2	..	3	..	4	..	5	..
6751-EM819826			110603		6 0.00000					
6752-MPC	1		8209 3		1.	8210 1		-1.		
6753-MPC	1		8210 1		-1.	110700 1		1.00000		EM821011
6754-EM821011			110701		1 1.00000	110702		1 1.00000		EM821021
6755-EM821021			110703		1 1.00000					
6756-MPC	1		8210 2		-1.	110700 2		.0		EM821012
6757-EM821012			110701		2 0.0	110702		2 0.0		EM821022
6758-EM821022			110703		2 0.0					
6759-MPC	1		8210 3		-1.	110700 3		1.00000		EM821013
6760-EM821013			110701		3 1.00000	110702		3 1.00000		EM821023
6761-EM821023			110703		3 1.00000					
6762-MPC	1		8210 4		-1.	110700 4		.0		EM821014
6763-EM821014			110701		4 0.0	110702		4 0.0		EM821024
6764-EM821024			110703		4 0.0					
6765-MPC	1		8210 5		-1.	110700 5		1.00000		EM821015
6766-EM821015			110701		5 1.00000	110702		5 1.00000		EM821025
6767-EM821025			110703		5 1.00000					
6768-MPC	1		8210 6		-1.	110700 6		.0		EM821016
6769-EM821016			110701		6 0.0	110702		6 0.0		EM821026
6770-EM821026			110703		6 0.0					
6771-MPC	1		8211 1		-1.	110700 1		1.00000		EM821111
6772-EM821111			110701		1 0.92388	110702		1 0.70711		EM821121
6773-EM821121			110703		1 0.38268					
6774-MPC	1		8211 2		-1.	110700 2		.0		EM821112
6775-EM821112			110701		2 0.38268	110702		2 0.70711		EM821122
6776-EM821122			110703		2 0.92388					
6777-MPC	1		8211 3		-1.	110700 3		1.00000		EM821113
6778-EM821113			110701		3 0.92388	110702		3 0.70711		EM821123
6779-EM821123			110703		3 0.38268					
6780-MPC	1		8211 4		-1.	110700 4		.0		EM821114
6781-EM821114			110701		4 0.38268	110702		4 0.70711		EM821124
6782-EM821124			110703		4 0.92388					
6783-MPC	1		8211 5		-1.	110700 5		1.00000		EM821115
6784-EM821115			110701		5 0.92388	110702		5 0.70711		EM821125
6785-EM821125			110703		5 0.38268					
6786-MPC	1		8211 6		-1.	110700 6		.0		EM821116
6787-EM821116			110701		6 0.38268	110702		6 0.70711		EM821126
6788-EM821126			110703		6 0.92388					
6789-MPC	1		8212 1		-1.	110700 1		1.00000		EM821211
6790-EM821211			110701		1 0.70711	110702		1 0.00000		EM821221
6791-EM821221			110703		1-0.70711					
6792-MPC	1		8212 2		-1.	110700 2		.0		EM821212
6793-EM821212			110701		2 0.70711	110702		2 1.00000		EM821222
6794-EM821222			110703		2 0.70711					
6795-MPC	1		8212 3		-1.	110700 3		1.00000		EM821213
6796-EM821213			110701		3 0.70711	110702		3 0.00000		EM821223
6797-EM821223			110703		3-0.70711					
6798-MPC	1		8212 4		-1.	110700 4		.0		EM821214
6799-EM821214			110701		4 0.70711	110702		4 1.00000		EM821224
6800-EM821224			110703		4 0.70711					

EXTERNAL TANK W. FLUID  
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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
6801-MPC	1			8212		5		-1.		110700		5				1.00000				EM821215	
6802-EM821215				110701				5	0.70711	110702						5	0.00000			EM821225	
6803-EM821225				110703				5	-0.70711												
6804-MPC	1			8212		6		-1.		110700		6				.0				EM821216	
6805-EM821216				110701				6	0.70711	110702						6	1.00000			EM821226	
6806-EM821226				110703				6	0.70711												
6807-MPC	1			8213		1		-1.		110700		1				1.00000				EM821311	
6808-EM821311				110701				1	0.38268	110702						1	-0.70711			EM821321	
6809-EM821321				110703				1	-0.92388												
6810-MPC	1			8213		2		-1.		110700		2				.0				EM821312	
6811-EM821312				110701				2	0.92388	110702						2	0.70711			EM821322	
6812-EM821322				110703				2	-0.38268												
6813-MPC	1			8213		3		-1.		110700		3				1.00000				EM821313	
6814-EM821313				110701				3	0.38268	110702						3	-0.70711			EM821323	
6815-EM821323				110703				3	-0.92388												
6816-MPC	1			8213		4		-1.		110700		4				.0				EM821314	
6817-EM821314				110701				4	0.92388	110702						4	0.70711			EM821324	
6818-EM821324				110703				4	-0.38268												
6819-MPC	1			8213		5		-1.		110700		5				1.00000				EM821315	
6820-EM821315				110701				5	0.38268	110702						5	-0.70711			EM821325	
6821-EM821325				110703				5	-0.92388												
6822-MPC	1			8213		6		-1.		110700		6				.0				EM821316	
6823-EM821316				110701				6	0.92388	110702						6	0.70711			EM821326	
6824-EM821326				110703				6	-0.38268												
6825-MPC	1			8214		1		-1.		110700		1				1.00000				EM821411	
6826-EM821411				110701				1	0.00000	110702						1	-1.00000			EM821421	
6827-EM821421				110703				1	-0.00000												
6828-MPC	1			8214		2		-1.		110700		2				.0				EM821412	
6829-EM821412				110701				2	1.00000	110702						2	0.00000			EM821422	
6830-EM821422				110703				2	-1.00000												
6831-MPC	1			8214		3		-1.		110700		3				1.00000				EM821413	
6832-EM821413				110701				3	0.00000	110702						3	-1.00000			EM821423	
6833-EM821423				110703				3	-0.00000												
6834-MPC	1			8214		4		-1.		110700		4				.0				EM821414	
6835-EM821414				110701				4	1.00000	110702						4	0.00000			EM821424	
6836-EM821424				110703				4	-1.00000												
6837-MPC	1			8214		5		-1.		110700		5				1.00000				EM821415	
6838-EM821415				110701				5	0.00000	110702						5	-1.00000			EM821425	
6839-EM821425				110703				5	-0.00000												
6840-MPC	1			8214		6		-1.		110700		6				.0				EM821416	
6841-EM821416				110701				6	1.00000	110702						6	0.00000			EM821426	
6842-EM821426				110703				6	-1.00000												
6843-MPC	1			8215		1		-1.		110700		1				1.00000				EM821511	
6844-EM821511				110701				1	-0.38268	110702						1	-0.70711			EM821521	
6845-EM821521				110703				1	0.92388												
6846-MPC	1			8215		2		-1.		110700		2				.0				EM821512	
6847-EM821512				110701				2	0.92388	110702						2	-0.70711			EM821522	
6848-EM821522				110703				2	-0.38268												
6849-MPC	1			8215		3		-1.		110700		3				1.00000				EM821513	
6850-EM821513				110701				3	-0.38268	110702						3	-0.70711			EM821523	



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S O R T E D B U L K D A T A E C H O										
CARD	1	2	3	4	5	6	7	8	9	10
6851-EM821523			110703		3 0.92388					
6852-MPC	1		8215	4	-1.	110700	4	.0		EM821514
6853-EM821514			110701		4 0.92388	110702		4-0.70711		EM821524
6854-EM821524			110703		4-0.38269					
6855-MPC	1		8215	5	-1.	110700	5	1.00000		EM821515
6856-EM821515			110701		5-0.38268	110702		5-0.70711		EM821525
6857-EM821525			110703		5 0.92388					
6858-MPC	1		8215	6	-1.	110700	6	.0		EM821516
6859-EM821516			110701		6 0.92388	110702		6-0.70711		EM821526
6860-EM821526			110703		6-0.38269					
6861-MPC	1		8215	1	-1.	110700	1	1.00000		EM821611
6862-EM821611			110701		1-0.70711	110702		1-0.00000		EM821621
6863-EM821621			110703		1 0.70711					
6864-MPC	1		8215	2	-1.	110700	2	.0		EM821612
6865-EM821612			110701		2 0.70711	110702		2-1.00000		EM821622
6866-EM821622			110703		2 0.70710					
6867-MPC	1		8215	3	-1.	110700	3	1.00000		EM821613
6868-EM821613			110701		3-0.70711	110702		3-0.00000		EM821623
6869-EM821623			110703		3 0.70711					
6870-MPC	1		8215	4	-1.	110700	4	.0		EM821614
6871-EM821614			110701		4 0.70711	110702		4-1.00000		EM821624
6872-EM821624			110703		4 0.70710					
6873-MPC	1		8215	5	-1.	110700	5	1.00000		EM821615
6874-EM821615			110701		5-0.70711	110702		5-0.00000		EM821625
6875-EM821625			110703		5 0.70711					
6876-MPC	1		8215	6	-1.	110700	6	.0		EM821616
6877-EM821616			110701		6 0.70711	110702		6-1.00000		EM821626
6878-EM821626			110703		6 0.70710					
6879-MPC	1		8217	1	-1.	110700	1	1.00000		EM821711
6880-EM821711			110701		1-0.92388	110702		1 0.70711		EM821721
6881-EM821721			110703		1-0.38268					
6882-MPC	1		8217	2	-1.	110700	2	.0		EM821712
6883-EM821712			110701		2 0.38268	110702		2-0.70711		EM821722
6884-EM821722			110703		2 0.92388					
6885-MPC	1		8217	3	-1.	110700	3	1.00000		EM821713
6886-EM821713			110701		3-0.92388	110702		3 0.70711		EM821723
6887-EM821723			110703		3-0.38268					
6888-MPC	1		8217	4	-1.	110700	4	.0		EM821714
6889-EM821714			110701		4 0.38268	110702		4-0.70711		EM821724
6890-EM821724			110703		4 0.92388					
6891-MPC	1		8217	5	-1.	110700	5	1.00000		EM821715
6892-EM821715			110701		5-0.92388	110702		5 0.70711		EM821725
6893-EM821725			110703		5-0.38268					
6894-MPC	1		8217	6	-1.	110700	6	.0		EM821716
6895-EM821716			110701		6 0.38268	110702		6-0.70711		EM821726
6896-EM821726			110703		6 0.92388					
6897-MPC	1		8218	1	-1.	110700	1	1.00000		EM821811
6898-EM821811			110701		1-1.00000	110702		1 1.00000		EM821821
6899-EM821821			110703		1-1.00000					
6900-MPC	1		8218	2	-1.	110700	2	.0		EM821812

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
6901-EM821812						110701				2 0.00000		110702				2-0.00000				EM821822	
6902-EM821822						110703				2 0.00000											
6903-MPC	1					8218	3			-1.		110700	3			1.00000				EM821813	
6904-EM821813						110701				3-1.00000		110702				3 1.00000				EM821823	
6905-EM821823						110703				3-1.00000											
6906-MPC	1					8218	4			-1.		110700	4			.0				EM821814	
6907-EM821814						110701				4 0.00000		110702				4-0.00000				EM821824	
6908-EM821824						110703				4 0.00000											
6909-MPC	1					8218	5			-1.		110700	5			1.00000				EM821815	
6910-EM821815						110701				5-1.00000		110702				5 1.00000				EM821825	
6911-EM821825						110703				5-1.00000											
6912-MPC	1					8218	6			-1.		110700	6			.0				EM821816	
6913-EM821816						110701				6 0.00000		110702				6-0.00000				EM821826	
6914-EM821826						110703				6 0.00000											
6915-MPC	1					8230	1			-1.		110800	1			1.00000				EM823011	
6916-EM823011						110801				1 1.00000		110802				1 1.00000				EM823021	
6917-EM823021						110803				1 1.00000											
6918-MPC	1					8230	2			-1.		110800	2			.0				EM823012	
6919-EM823012						110801				2 0.0		110802				2 0.0				EM823022	
6920-EM823022						110803				2 0.0											
6921-MPC	1					8230	3			-1.		110800	3			1.00000				EM823013	
6922-EM823013						110801				3 1.00000		110802				3 1.00000				EM823023	
6923-EM823023						110803				3 1.00000											
6924-MPC	1					8230	4			-1.		110800	4			.0				EM823014	
6925-EM823014						110801				4 0.0		110802				4 0.0				EM823024	
6926-EM823024						110803				4 0.0											
6927-MPC	1					8230	5			-1.		110800	5			1.00000				EM823015	
6928-EM823015						110801				5 1.00000		110802				5 1.00000				EM823025	
6929-EM823025						110803				5 1.00000											
6930-MPC	1					8230	6			-1.		110800	6			.0				EM823016	
6931-EM823016						110801				6 0.0		110802				6 0.0				EM823026	
6932-EM823026						110803				6 0.0											
6933-MPC	1					8231	1			-1.		110800	1			1.00000				EM823111	
6934-EM823111						110801				1 0.92388		110802				1 0.70711				EM823121	
6935-EM823121						110803				1 0.38268											
6936-MPC	1					8231	2			-1.		110800	2			.0				EM823112	
6937-EM823112						110801				2 0.38268		110802				2 0.70711				EM823122	
6938-EM823122						110803				2 0.92388											
6939-MPC	1					8231	3			-1.		110800	3			1.00000				EM823113	
6940-EM823113						110801				3 0.92388		110802				3 0.70711				EM823123	
6941-EM823123						110803				3 0.38268											
6942-MPC	1					8231	4			-1.		110800	4			.0				EM823114	
6943-EM823114						110801				4 0.38268		110802				4 0.70711				EM823124	
6944-EM823124						110803				4 0.92388											
6945-MPC	1					8231	5			-1.		110800	5			1.00000				EM823115	
6946-EM823115						110801				5 0.92388		110802				5 0.70711				EM823125	
6947-EM823125						110803				5 0.38268											
6948-MPC	1					8231	6			-1.		110800	6			.0				EM823116	
6949-EM823116						110801				6 0.38268		110802				6 0.70711				EM823126	
6950-EM823126						110803				6 0.92388											

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CARD	1	2	3	4	5	6	7	8	9	10
CJUNT .	1	..								
6951- MPC	1		8232	1	-1.	110800	1	1.00000		6M823211
6952- 6M823211			110801		1 0.70711	110802		1 0.00000		6M823221
6953- 6M823221			110803		1-0.70711					
6954- MPC	1		8232	2	-1.	110800	2	.0		6M823212
6955- 6M823212			110801		2 0.70711	110802		2 1.00000		6M823222
6956- 6M823222			110803		2 0.70711					
6957- MPC	1		8232	3	-1.	110800	3	1.00000		6M823213
6958- 6M823213			110801		3 0.70711	110802		3 0.00000		6M823223
6959- 6M823223			110803		3-0.70711					
6960- MPC	1		8232	4	-1.	110800	4	.0		6M823214
6961- 6M823214			110801		4 0.70711	110802		4 1.00000		6M823224
6962- 6M823224			110803		4 0.70711					
6963- MPC	1		8232	5	-1.	110800	5	1.00000		6M823215
6964- 6M823215			110801		5 0.70711	110802		5 0.00000		6M823225
6965- 6M823225			110803		5-0.70711					
6966- MPC	1		8232	6	-1.	110800	6	.0		6M823216
6967- 6M823216			110801		6 0.70711	110802		6 1.00000		6M823226
6968- 6M823226			110803		6 0.70711					
6969- MPC	1		8233	1	-1.	110800	1	1.00000		6M823311
6970- 6M823311			110801		1 0.38268	110802		1-0.70711		6M823321
6971- 6M823321			110803		1-0.92388					
6972- MPC	1		8233	2	-1.	110800	2	.0		6M823312
6973- 6M823312			110801		2 0.92388	110802		2 0.70711		6M823322
6974- 6M823322			110803		2-0.38268					
6975- MPC	1		8233	3	-1.	110800	3	1.00000		6M823313
6976- 6M823313			110801		3 0.38268	110802		3-0.70711		6M823323
6977- 6M823323			110803		3-0.92388					
6978- MPC	1		8233	4	-1.	110800	4	.0		6M823314
6979- 6M823314			110801		4 0.92388	110802		4 0.70711		6M823324
6980- 6M823324			110803		4-0.38268					
6981- MPC	1		8233	5	-1.	110800	5	1.00000		6M823315
6982- 6M823315			110801		5 0.38268	110802		5-0.70711		6M823325
6983- 6M823325			110803		5-0.92388					
6984- MPC	1		8233	6	-1.	110800	6	.0		6M823316
6985- 6M823316			110801		6 0.92388	110802		6 0.70711		6M823326
6986- 6M823326			110803		6-0.38268					
6987- MPC	1		8234	1	-1.	110800	1	1.00000		6M823411
6988- 6M823411			110801		1 0.00000	110802		1-1.00000		6M823421
6989- 6M823421			110803		1-0.00000					
6990- MPC	1		8234	2	-1.	110800	2	.0		6M823412
6991- 6M823412			110801		2 1.00000	110802		2 0.00000		6M823422
6992- 6M823422			110803		2-1.00000					
6993- MPC	1		8234	3	-1.	110800	3	1.00000		6M823413
6994- 6M823413			110801		3 0.00000	110802		3-1.00000		6M823423
6995- 6M823423			110803		3-0.00000					
6996- MPC	1		8234	4	-1.	110800	4	.0		6M823414
6997- 6M823414			110801		4 1.00000	110802		4 0.00000		6M823424
6998- 6M823424			110803		4-1.00000					
6999- MPC	1		8234	5	-1.	110800	5	1.00000		6M823415
7000- 6M823415			110801		5 0.00000	110802		5-1.00000		6M823425

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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
7001-EM823425			110803		5-0.00000						
7002-MPC	1		8234	6	-1.	110800	6		.0		EM823416
7003-EM823416			110801		6 1.00000	110802			6 0.00000		EM823426
7004-EM823426			110803		6-1.00000						
7005-MPC	1		8235	1	-1.	110800	1		1.00000		EM823511
7006-EM823511			110801		1-0.38268	110802			1-0.70711		EM823521
7007-EM823521			110803		1 0.92388						
7008-MPC	1		8235	2	-1.	110800	2		.0		EM823512
7009-EM823512			110801		2 0.92388	110802			2-0.70711		EM823522
7010-EM823522			110803		2-0.38269						
7011-MPC	1		8235	3	-1.	110800	3		1.00000		EM823513
7012-EM823513			110801		3-0.38268	110802			3-0.70711		EM823523
7013-EM823523			110803		3 0.92388						
7014-MPC	1		8235	4	-1.	110800	4		.0		EM823514
7015-EM823514			110801		4 0.92388	110802			4-0.70711		EM823524
7016-EM823524			110803		4-0.38269						
7017-MPC	1		8235	5	-1.	110800	5		1.00000		EM823515
7018-EM823515			110801		5-0.38268	110802			5-0.70711		EM823525
7019-EM823525			110803		5 0.92388						
7020-MPC	1		8235	6	-1.	110800	6		.0		EM823516
7021-EM823516			110801		6 0.92388	110802			6-0.70711		EM823526
7022-EM823526			110803		6-0.38269						
7023-MPC	1		8236	1	-1.	110800	1		1.00000		EM823611
7024-EM823611			110801		1-0.70711	110802			1-0.00000		EM823621
7025-EM823621			110803		1 0.70711						
7026-MPC	1		8236	2	-1.	110800	2		.0		EM823612
7027-EM823612			110801		2 0.70711	110802			2-1.00000		EM823622
7028-EM823622			110803		2 0.70710						
7029-MPC	1		8236	3	-1.	110800	3		1.00000		EM823613
7030-EM823613			110801		3-0.70711	110802			3-0.00000		EM823623
7031-EM823623			110803		3 0.70711						
7032-MPC	1		8236	4	-1.	110800	4		.0		EM823614
7033-EM823614			110801		4 0.70711	110802			4-1.00000		EM823624
7034-EM823624			110803		4 0.70710						
7035-MPC	1		8236	5	-1.	110800	5		1.00000		EM823615
7036-EM823615			110801		5-0.70711	110802			5-0.00000		EM823625
7037-EM823625			110803		5 0.70711						
7038-MPC	1		8236	6	-1.	110800	6		.0		EM823616
7039-EM823616			110801		6 0.70711	110802			6-1.00000		EM823626
7040-EM823626			110803		6 0.70710						
7041-MPC	1		8237	1	-1.	110800	1		1.00000		EM823711
7042-EM823711			110801		1-0.92388	110802			1 0.70711		EM823721
7043-EM823721			110803		1-0.38268						
7044-MPC	1		8237	2	-1.	110800	2		.0		EM823712
7045-EM823712			110801		2 0.38268	110802			2-0.70711		EM823722
7046-EM823722			110803		2 0.92388						
7047-MPC	1		8237	3	-1.	110800	3		1.00000		EM823713
7048-EM823713			110801		3-0.92388	110802			3 0.70711		EM823723
7049-EM823723			110803		3-0.38268						
7050-MPC	1		8237	4	-1.	110800	4		.0		EM823714

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CARD	1	2	3	4	5	6	7	8	9	10
7051-EM823714	110801	4	0.38268	110802	4-0.70711					EM823724
7052-EM823724	110803	4	0.92388							
7053-MPC	8237	5	-1.	110800	5	1.00000				EM823715
7054-EM823715	110801		5-0.92388	110802	5	0.70711				EM823725
7055-EM823725	110803		5-0.38268							
7056-MPC	8237	6	-1.	110800	6	.0				EM823716
7057-EM823716	110801		6	0.38268	110802	6-0.70711				EM823726
7059-EM823726	110803		6	0.92388						
7059-MPC	8238	1	-1.	110800	1	1.00000				EM823811
7060-EM823811	110801		1-1.00000	110802	1	1.00000				EM823821
7061-EM823821	110803		1-1.00000							
7062-MPC	8238	2	-1.	110800	2	.0				EM823812
7063-EM823812	110801		2	0.00000	110802	2-0.00000				EM823822
7064-EM823822	110803		2	0.00000						
7065-MPC	8238	3	-1.	110800	3	1.00000				EM823813
7066-EM823813	110801		3-1.00000	110802	3	1.00000				EM823823
7067-EM823823	110803		3-1.00000							
7068-MPC	8238	4	-1.	110800	4	.0				EM823814
7069-EM823814	110801		4	0.00000	110802	4-0.00000				EM823824
7070-EM823824	110803		4	0.00000						
7071-MPC	8238	5	-1.	110800	5	1.00000				EM823815
7072-EM823815	110801		5-1.00000	110802	5	1.00000				EM823825
7073-EM823825	110803		5-1.00000							
7074-MPC	8238	6	-1.	110800	6	.0				EM823816
7075-EM823816	110801		6	0.00000	110802	6-0.00000				EM823826
7076-EM823826	110803		6	0.00000						
7077-MPC	8250	1	-1.	110900	1	1.00000				EM825011
7078-EM825011	110901		1	1.00000	110902	1	1.00000			EM825021
7079-EM825021	110903		1	1.00000						
7090-MPC	8250	2	-1.	110900	2	.0				EM825012
7091-EM825012	110901		2	0.0	110902	2	0.0			EM825022
7092-EM825022	110903		2	0.0						
7083-MPC	8250	3	-1.	110900	3	1.00000				EM825013
7084-EM825013	110901		3	1.00000	110902	3	1.00000			EM825023
7095-EM825023	110903		3	1.00000						
7086-MPC	8250	4	-1.	110900	4	.0				EM825014
7097-EM825014	110901		4	0.0	110902	4	0.0			EM825024
7098-EM825024	110903		4	0.0						
7089-MPC	8250	5	-1.	110900	5	1.00000				EM825015
7090-EM825015	110901		5	1.00000	110902	5	1.00000			EM825025
7091-EM825025	110903		5	1.00000						
7092-MPC	8250	6	-1.	110900	6	.0				EM825016
7093-EM825016	110901		6	0.0	110902	6	0.0			EM825026
7094-EM825026	110903		6	0.0						
7095-MPC	8251	1	-1.	110900	1	1.00000				EM825111
7096-EM825111	110901		1	0.92388	110902	1	0.70711			EM825121
7097-EM825121	110903		1	0.38268						
7093-MPC	8251	2	-1.	110900	2	.0				EM825112
7099-EM825112	110901		2	0.38268	110902	2	0.70711			EM825122
7100-EM825122	110903		2	0.92388						

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
7101-MPC	1			8251		3				-1.		110900		3		1.00000				CM825113	
7102-CM825113						110901				3 0.92388		110902				3 0.70711				CM825123	
7103-CM825123						110903				3 0.38268											
7104-MPC	1			8251		4				-1.		110900		4		.0				CM825114	
7105-CM825114						110901				4 0.38268		110902				4 0.70711				CM825124	
7106-CM825124						110903				4 0.92388											
7107-MPC	1			8251		5				-1.		110900		5		1.00000				CM825115	
7108-CM825115						110901				5 0.92388		110902				5 0.70711				CM825125	
7109-CM825125						110903				5 0.38268											
7110-MPC	1			8251		6				-1.		110900		6		.0				CM825116	
7111-CM825116						110901				6 0.38268		110902				6 0.70711				CM825126	
7112-CM825126						110903				6 0.92388											
7113-MPC	1			8252		1				-1.		110900		1		1.00000				CM825211	
7114-CM825211						110901				1 0.70711		110902				1 0.00000				CM825221	
7115-CM825221						110903				1-0.70711											
7116-MPC	1			8252		2				-1.		110900		2		.0				CM825212	
7117-CM825212						110901				2 0.70711		110902				2 1.00000				CM825222	
7118-CM825222						110903				2 0.70711											
7119-MPC	1			8252		3				-1.		110900		3		1.00000				CM825213	
7120-CM825213						110901				3 0.70711		110902				3 0.00000				CM825223	
7121-CM825223						110903				3-0.70711											
7122-MPC	1			8252		4				-1.		110900		4		.0				CM825214	
7123-CM825214						110901				4 0.70711		110902				4 1.00000				CM825224	
7124-CM825224						110903				4 0.70711											
7125-MPC	1			8252		5				-1.		110900		5		1.00000				CM825215	
7126-CM825215						110901				5 0.70711		110902				5 0.00000				CM825225	
7127-CM825225						110903				5-0.70711											
7128-MPC	1			8252		6				-1.		110900		6		.0				CM825216	
7129-CM825216						110901				6 0.70711		110902				6 1.00000				CM825226	
7130-CM825226						110903				6 0.70711											
7131-MPC	1			8253		1				-1.		110900		1		1.00000				CM825311	
7132-CM825311						110901				1 0.38268		110902				1-0.70711				CM825321	
7133-CM825321						110903				1-0.92388											
7134-MPC	1			8253		2				-1.		110900		2		.0				CM825312	
7135-CM825312						110901				2 0.92388		110902				2 0.70711				CM825322	
7136-CM825322						110903				2-0.38268											
7137-MPC	1			8253		3				-1.		110900		3		1.00000				CM825313	
7138-CM825313						110901				3 0.38268		110902				3-0.70711				CM825323	
7139-CM825323						110903				3-0.92388											
7140-MPC	1			8253		4				-1.		110900		4		.0				CM825314	
7141-CM825314						110901				4 0.92388		110902				4 0.70711				CM825324	
7142-CM825324						110903				4-0.38268											
7143-MPC	1			8253		5				-1.		110900		5		1.00000				CM825315	
7144-CM825315						110901				5 0.38268		110902				5-0.70711				CM825325	
7145-CM825325						110903				5-0.92388											
7146-MPC	1			8253		6				-1.		110900		6		.0				CM825316	
7147-CM825316						110901				6 0.92388		110902				6 0.70711				CM825326	
7148-CM825326						110903				6-0.38268											
7149-MPC	1			8254		1				-1.		110900		1		1.00000				CM825411	
7150-CM825411						110901				1 0.00000		110902				1-1.00000				CM825421	

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
7151- EM825421				110903		1-0.00000					
7152- MPC	1		8254	2		-1.	110900	2	.0		EM825412
7153- EM825412				110901		2 1.00000	110902		2 0.00000		EM825422
7154- EM825422				110903		2-1.00000					
7155- MPC	1		8254	3		-1.	110900	3	1.00000		EM825413
7156- EM825413				110901		3 0.00000	110902		3-1.00000		EM825423
7157- EM825423				110903		3-0.00000					
7158- MPC	1		8254	4		-1.	110900	4	.0		EM825414
7159- EM825414				110901		4 1.00000	110902		4 0.00000		EM825424
7160- EM825424				110903		4-1.00000					
7161- MPC	1		8254	5		-1.	110900	5	1.00000		EM825415
7162- EM825415				110901		5 0.00000	110902		5-1.00000		EM825425
7163- EM825425				110903		5-0.00000					
7164- MPC	1		8254	6		-1.	110900	6	.0		EM825416
7165- EM825416				110901		6 1.00000	110902		6 0.00000		EM825426
7166- EM825426				110903		6-1.00000					
7167- MPC	1		8255	1		-1.	110900	1	1.00000		EM825511
7168- EM825511				110901		1-0.38268	110902		1-0.70711		EM825521
7169- EM825521				110903		1 0.92388					
7170- MPC	1		8255	2		-1.	110900	2	.0		EM825512
7171- EM825512				110901		2 0.92388	110902		2-0.70711		EM825522
7172- EM825522				110903		2-0.38269					
7173- MPC	1		8255	3		-1.	110900	3	1.00000		EM825513
7174- EM825513				110901		3-0.38268	110902		3-0.70711		EM825523
7175- EM825523				110903		3 0.92388					
7176- MPC	1		8255	4		-1.	110900	4	.0		EM825514
7177- EM825514				110901		4 0.92388	110902		4-0.70711		EM825524
7178- EM825524				110903		4-0.38269					
7179- MPC	1		8255	5		-1.	110900	5	1.00000		EM825515
7180- EM825515				110901		5-0.38268	110902		5-0.70711		EM825525
7181- EM825525				110903		5 0.92388					
7182- MPC	1		8255	6		-1.	110900	6	.0		EM825516
7183- EM825516				110901		6 0.92388	110902		6-0.70711		EM825526
7184- EM825526				110903		6-0.38269					
7185- MPC	1		8256	1		-1.	110900	1	1.00000		EM825611
7186- EM825611				110901		1-0.70711	110902		1-0.00000		EM825621
7187- EM825621				110903		1 0.70711					
7188- MPC	1		8256	2		-1.	110900	2	.0		EM825612
7189- EM825612				110901		2 0.70711	110902		2-1.00000		EM825622
7190- EM825622				110903		2 0.70710					
7191- MPC	1		8256	3		-1.	110900	3	1.00000		EM825613
7192- EM825613				110901		3-0.70711	110902		3-0.00000		EM825623
7193- EM825623				110903		3 0.70711					
7194- MPC	1		8256	4		-1.	110900	4	.0		EM825614
7195- EM825614				110901		4 0.70711	110902		4-1.00000		EM825624
7196- EM825624				110903		4 0.70710					
7197- MPC	1		8256	5		-1.	110900	5	1.00000		EM825615
7198- EM825615				110901		5-0.70711	110902		5-0.00000		EM825625
7199- EM825625				110903		5 0.70711					
7200- MPC	1		8256	6		-1.	110900	6	.0		EM825616

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	..
7201-ENR25616						110901				6 0.70711		110902				6-1.00000				ENR25626	
7202-ENR25626						110903				6 0.70710											
7203-MPC	1			8257		1				-1.		110900	1			1.00000				ENR25711	
7204-ENR25711						110901				1-0.92388		110902				1 0.70711				ENR25721	
7205-ENR25721						110903				1-0.38268											
7206-MPC	1			8257		2				-1.		110900	2			.0				ENR25712	
7207-ENR25712						110901				2 0.38268		110902				2-0.70711				ENR25722	
7208-ENR25722						110903				2 0.92388											
7209-MPC	1			8257		3				-1.		110900	3			1.00000				ENR25713	
7210-ENR25713						110901				3-0.92388		110902				3 0.70711				ENR25723	
7211-ENR25723						110903				3-0.38268											
7212-MPC	1			8257		4				-1.		110900	4			.0				ENR25714	
7213-ENR25714						110901				4 0.38268		110902				4-0.70711				ENR25724	
7214-ENR25724						110903				4 0.92388											
7215-MPC	1			8257		5				-1.		110900	5			1.00000				ENR25715	
7216-ENR25715						110901				5-0.92388		110902				5 0.70711				ENR25725	
7217-ENR25725						110903				5-0.38268											
7218-MPC	1			8257		6				-1.		110900	6			.0				ENR25716	
7219-ENR25716						110901				6 0.38268		110902				6-0.70711				ENR25726	
7220-ENR25726						110903				6 0.92388											
7221-MPC	1			8258		1				-1.		110900	1			1.00000				ENR25811	
7222-ENR25811						110901				1-1.00000		110902				1 1.00000				ENR25821	
7223-ENR25821						110903				1-1.00000											
7224-MPC	1			8258		2				-1.		110900	2			.0				ENR25812	
7225-ENR25812						110901				2 0.00000		110902				2-0.00000				ENR25822	
7226-ENR25822						110903				2 0.00000											
7227-MPC	1			8258		3				-1.		110900	3			1.00000				ENR25813	
7228-ENR25813						110901				3-1.00000		110902				3 1.00000				ENR25823	
7229-ENR25823						110903				3-1.00000											
7230-MPC	1			8258		4				-1.		110900	4			.0				ENR25814	
7231-ENR25814						110901				4 0.00000		110902				4-0.00000				ENR25824	
7232-ENR25824						110903				4 0.00000											
7233-MPC	1			8258		5				-1.		110900	5			1.00000				ENR25815	
7234-ENR25815						110901				5-1.00000		110902				5 1.00000				ENR25825	
7235-ENR25825						110903				5-1.00000											
7236-MPC	1			8258		6				-1.		110900	6			.0				ENR25816	
7237-ENR25816						110901				6 0.00000		110902				6-0.00000				ENR25826	
7238-ENR25826						110903				6 0.00000											
7239-MPC	1			8270		1				-1.		111000	1			1.00000				ENR27011	
7240-ENR27011						111001				1 1.00000		111002				1 1.00000				ENR27021	
7241-ENR27021						111003				1 1.00000											
7242-MPC	1			8270		2				-1.		111000	2			.0				ENR27012	
7243-ENR27012						111001				2 0.0		111002				2 0.0				ENR27022	
7244-ENR27022						111003				2 0.0											
7245-MPC	1			8270		3				-1.		111000	3			1.00000				ENR27013	
7246-ENR27013						111001				3 1.00000		111002				3 1.00000				ENR27023	
7247-ENR27023						111003				3 1.00000											
7248-MPC	1			8270		4				-1.		111000	4			.0				ENR27014	
7249-ENR27014						111001				4 0.0		111002				4 0.0				ENR27024	
7250-ENR27024						111003				4 0.0											



EXTERNAL TANK W. FLUID  
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CARD

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
7251-MPC	1	8270	5	-1.	111000	5	1.00000		EM827015		
7252-EM827015		111001	5	1.00000	111002	5	1.00000		EM827025		
7253-EM827025		111003	5	1.00000							
7254-MPC	1	8270	6	-1.	111000	6	.0		EM827016		
7255-EM827016		111001	6	0.0	111002	6	0.0		EM827026		
7256-EM827026		111003	6	0.0							
7257-MPC	1	8271	1	-1.	111000	1	1.00000		EM827111		
7259-EM827111		111001	1	0.92388	111002	1	0.70711		EM827121		
7259-EM827121		111003	1	0.38268							
7260-MPC	1	8271	2	-1.	111000	2	.0		EM827112		
7261-EM827112		111001	2	0.38268	111002	2	0.70711		EM827122		
7262-EM827122		111003	2	0.92388							
7263-MPC	1	8271	3	-1.	111000	3	1.00000		EM827113		
7264-EM827113		111001	3	0.92388	111002	3	0.70711		EM827123		
7265-EM827123		111003	3	0.38268							
7266-MPC	1	8271	4	-1.	111000	4	.0		EM827114		
7267-EM827114		111001	4	0.38268	111002	4	0.70711		EM827124		
7268-EM827124		111003	4	0.92388							
7269-MPC	1	8271	5	-1.	111000	5	1.00000		EM827115		
7270-EM827115		111001	5	0.92388	111002	5	0.70711		EM827125		
7271-EM827125		111003	5	0.38268							
7272-MPC	1	8271	6	-1.	111000	6	.0		EM827116		
7273-EM827116		111001	6	0.38268	111002	6	0.70711		EM827126		
7274-EM827126		111003	6	0.92388							
7275-MPC	1	8272	1	-1.	111000	1	1.00000		EM827211		
7276-EM827211		111001	1	0.70711	111002	1	0.00000		EM827221		
7277-EM827221		111003	1	0.70711							
7278-MPC	1	8272	2	-1.	111000	2	.0		EM827212		
7279-EM827212		111001	2	0.70711	111002	2	1.00000		EM827222		
7280-EM827222		111003	2	0.70711							
7281-MPC	1	8272	3	-1.	111000	3	1.00000		EM827213		
7282-EM827213		111001	3	0.70711	111002	3	0.00000		EM827223		
7283-EM827223		111003	3	0.70711							
7284-MPC	1	8272	4	-1.	111000	4	.0		EM827214		
7285-EM827214		111001	4	0.70711	111002	4	1.00000		EM827224		
7286-EM827224		111003	4	0.70711							
7287-MPC	1	8272	5	-1.	111000	5	1.00000		EM827215		
7288-EM827215		111001	5	0.70711	111002	5	0.00000		EM827225		
7289-EM827225		111003	5	0.70711							
7290-MPC	1	8272	6	-1.	111000	6	.0		EM827216		
7291-EM827216		111001	6	0.70711	111002	6	1.00000		EM827226		
7292-EM827226		111003	6	0.70711							
7293-MPC	1	8273	1	-1.	111000	1	1.00000		EM827311		
7294-EM827311		111001	1	0.38268	111002	1	0.70711		EM827321		
7295-EM827321		111003	1	0.92388							
7296-MPC	1	8273	2	-1.	111000	2	.0		EM827312		
7297-EM827312		111001	2	0.92388	111002	2	0.70711		EM827322		
7298-EM827322		111003	2	0.38268							
7299-MPC	1	8273	3	-1.	111000	3	1.00000		EM827313		
7300-EM827313		111001	3	0.38268	111002	3	0.70711		EM827323		

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	..	2	..	3	..	4	..	5	..
7301-EM827323			111003		3-0.92388					
7302-MPC	1		8273	4	-1.	111000	4	.0		EM827314
7303-EM827314			111001		4 0.92388	111002		4 0.70711		EM827324
7304-EM827324			111003		4-0.38268					
7305-MPC	1		8273	5	-1.	111000	5	1.00000		EM827315
7306-EM827315			111001		5 0.38268	111002		5-0.70711		EM827325
7307-EM827325			111003		5-0.92388					
7308-MPC	1		8273	6	-1.	111000	6	.0		EM827316
7309-EM827316			111001		6 0.92388	111002		6 0.70711		EM827326
7310-EM827326			111003		6-0.38268					
7311-MPC	1		8274	1	-1.	111000	1	1.00000		EM827411
7312-EM827411			111001		1 0.00000	111002		1-1.00000		EM827421
7313-EM827421			111003		1-0.00000					
7314-MPC	1		8274	2	-1.	111000	2	.0		EM827412
7315-EM827412			111001		2 1.00000	111002		2 0.00000		EM827422
7316-EM827422			111003		2-1.00000					
7317-MPC	1		8274	3	-1.	111000	3	1.00000		EM827413
7318-EM827413			111001		3 0.00000	111002		3-1.00000		EM827423
7319-EM827423			111003		3-0.00000					
7320-MPC	1		8274	4	-1.	111000	4	.0		EM827414
7321-EM827414			111001		4 1.00000	111002		4 0.00000		EM827424
7322-EM827424			111003		4-1.00000					
7323-MPC	1		8274	5	-1.	111000	5	1.00000		EM827415
7324-EM827415			111001		5 0.00000	111002		5-1.00000		EM827425
7325-EM827425			111003		5-0.00000					
7326-MPC	1		8274	6	-1.	111000	6	.0		EM827416
7327-EM827416			111001		6 1.00000	111002		6 0.00000		EM827426
7328-EM827426			111003		6-1.00000					
7329-MPC	1		8275	1	-1.	111000	1	1.00000		EM827511
7330-EM827511			111001		1-0.38268	111002		1-0.70711		EM827521
7331-EM827521			111003		1 0.92388					
7332-MPC	1		8275	2	-1.	111000	2	.0		EM827512
7333-EM827512			111001		2 0.92388	111002		2-0.70711		EM827522
7334-EM827522			111003		2-0.38269					
7335-MPC	1		8275	3	-1.	111000	3	1.00000		EM827513
7336-EM827513			111001		3-0.38268	111002		3-0.70711		EM827523
7337-EM827523			111003		3 0.92388					
7338-MPC	1		8275	4	-1.	111000	4	.0		EM827514
7339-EM827514			111001		4 0.92388	111002		4-0.70711		EM827524
7340-EM827524			111003		4-0.38269					
7341-MPC	1		8275	5	-1.	111000	5	1.00000		EM827515
7342-EM827515			111001		5-0.38268	111002		5-0.70711		EM827525
7343-EM827525			111003		5 0.92388					
7344-MPC	1		8275	6	-1.	111000	6	.0		EM827516
7345-EM827516			111001		6 0.92388	111002		6-0.70711		EM827526
7346-EM827526			111003		6-0.38269					
7347-MPC	1		8276	1	-1.	111000	1	1.00000		EM827611
7348-EM827611			111001		1-0.70711	111002		1-0.00000		EM827621
7349-EM827621			111003		1 0.70711					
7350-MPC	1		8276	2	-1.	111000	2	.0		EM827612

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT.	1	2	3	4	5	6	7	8	9	10
7351-EME27612	111001			2	0.70711	111002		2-1.00000		EME27622
7352-EME27622	111003			2	0.70710					
7353-MPC	1	8276	3	-1.	111000	3		1.00000		EME27613
7354-EME27613	111001			3-0.70711	111002			3-0.00000		EME27623
7355-EME27623	111003			3	0.70711					
7356-MPC	1	8276	4	-1.	111000	4		.0		EME27614
7357-EME27614	111001			4	0.70711	111002		4-1.00000		EME27624
7358-EME27624	111003			4	0.70710					
7359-MPC	1	8276	5	-1.	111000	5		1.00000		EME27615
7360-EME27615	111001			5-0.70711	111002			5-0.00000		EME27625
7361-EME27625	111003			5	0.70711					
7362-MPC	1	8276	6	-1.	111000	6		.0		EME27616
7363-EME27616	111001			6	0.70711	111002		6-1.00000		EME27626
7364-EME27626	111003			6	0.70710					
7365-MPC	1	8277	1	-1.	111000	1		1.00000		EME27711
7366-EME27711	111001			1-0.92388	111002			1	0.70711	EME27721
7367-EME27721	111003			1-0.38268						
7368-MPC	1	8277	2	-1.	111000	2		.0		EME27712
7369-EME27712	111001			2	0.38268	111002		2-0.70711		EME27722
7370-EME27722	111003			2	0.92388					
7371-MPC	1	8277	3	-1.	111000	3		1.00000		EME27713
7372-EME27713	111001			3-0.92388	111002			3	0.70711	EME27723
7373-EME27723	111003			3-0.38268						
7374-MPC	1	8277	4	-1.	111000	4		.0		EME27714
7375-EME27714	111001			4	0.38268	111002		4-0.70711		EME27724
7376-EME27724	111003			4	0.92388					
7377-MPC	1	8277	5	-1.	111000	5		1.00000		EME27715
7378-EME27715	111001			5-0.92388	111002			5	0.70711	EME27725
7379-EME27725	111003			5-0.38268						
7380-MPC	1	8277	6	-1.	111000	6		.0		EME27716
7381-EME27716	111001			6	0.38268	111002		6-0.70711		EME27726
7382-EME27726	111003			6	0.92388					
7383-MPC	1	8278	1	-1.	111000	1		1.00000		EME27811
7384-EME27811	111001			1-1.00000	111002			1	1.00000	EME27821
7385-EME27821	111003			1-1.00000						
7386-MPC	1	8278	2	-1.	111000	2		.0		EME27812
7387-EME27812	111001			2	0.00000	111002		2-0.00000		EME27822
7388-EME27822	111003			2	0.00000					
7389-MPC	1	8278	3	-1.	111000	3		1.00000		EME27813
7390-EME27813	111001			3-1.00000	111002			3	1.00000	EME27823
7391-EME27823	111003			3-1.00000						
7392-MPC	1	8278	4	-1.	111000	4		.0		EME27814
7393-EME27814	111001			4	0.00000	111002		4-0.00000		EME27824
7394-EME27824	111003			4	0.00000					
7395-MPC	1	8278	5	-1.	111000	5		1.00000		EME27815
7396-EME27815	111001			5-1.00000	111002			5	1.00000	EME27825
7397-EME27825	111003			5-1.00000						
7398-MPC	1	8278	6	-1.	111000	6		.0		EME27816
7399-EME27816	111001			6	0.00000	111002		6-0.00000		EME27826
7400-EME27826	111003			6	0.00000					

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	2	3	4	5	6	7	8	9	10
7401-MPC	1	8290	1	-1.	111100	1	1.00000		EM829011	
7402-EM829011		111101		1 1.00000	111102		1 1.00000		EM829021	
7403-EM829021		111103		1 1.00000						
7404-MPC	1	8290	2	-1.	111100	2	.0		EM829012	
7405-EM829012		111101		2 0.0	111102		2 0.0		EM829022	
7406-EM829022		111103		2 0.0						
7407-MPC	1	8290	3	-1.	111100	3	1.00000		EM829013	
7408-EM829013		111101		3 1.00000	111102		3 1.00000		EM829023	
7409-EM829023		111103		3 1.00000						
7410-MPC	1	8290	4	-1.	111100	4	.0		EM829014	
7411-EM829014		111101		4 0.0	111102		4 0.0		EM829024	
7412-EM829024		111103		4 0.0						
7413-MPC	1	8290	5	-1.	111100	5	1.00000		EM829015	
7414-EM829015		111101		5 1.00000	111102		5 1.00000		EM829025	
7415-EM829025		111103		5 1.00000						
7416-MPC	1	8290	6	-1.	111100	6	.0		EM829016	
7417-EM829016		111101		6 0.0	111102		6 0.0		EM829026	
7418-EM829026		111103		6 0.0						
7419-MPC	1	8291	1	-1.	111100	1	1.00000		EM829111	
7420-EM829111		111101		1 0.92388	111102		1 0.70711		EM829121	
7421-EM829121		111103		1 0.38268						
7422-MPC	1	8291	2	-1.	111100	2	.0		EM829112	
7423-EM829112		111101		2 0.38268	111102		2 0.70711		EM829122	
7424-EM829122		111103		2 0.92388						
7425-MPC	1	8291	3	-1.	111100	3	1.00000		EM829113	
7426-EM829113		111101		3 0.92388	111102		3 0.70711		EM829123	
7427-EM829123		111103		3 0.38268						
7428-MPC	1	8291	4	-1.	111100	4	.0		EM829114	
7429-EM829114		111101		4 0.38268	111102		4 0.70711		EM829124	
7430-EM829124		111103		4 0.92388						
7431-MPC	1	8291	5	-1.	111100	5	1.00000		EM829115	
7432-EM829115		111101		5 0.92388	111102		5 0.70711		EM829125	
7433-EM829125		111103		5 0.38268						
7434-MPC	1	8291	6	-1.	111100	6	.0		EM829116	
7435-EM829116		111101		6 0.38268	111102		6 0.70711		EM829126	
7436-EM829126		111103		6 0.92388						
7437-MPC	1	8292	1	-1.	111100	1	1.00000		EM829211	
7438-EM829211		111101		1 0.70711	111102		1 0.00000		EM829221	
7439-EM829221		111103		1-0.70711						
7440-MPC	1	8292	2	-1.	111100	2	.0		EM829212	
7441-EM829212		111101		2 0.70711	111102		2 1.00000		EM829222	
7442-EM829222		111103		2 0.70711						
7443-MPC	1	8292	3	-1.	111100	3	1.00000		EM829213	
7444-EM829213		111101		3 0.70711	111102		3 0.00000		EM829223	
7445-EM829223		111103		3-0.70711						
7446-MPC	1	8292	4	-1.	111100	4	.0		EM829214	
7447-EM829214		111101		4 0.70711	111102		4 1.00000		EM829224	
7448-EM829224		111103		4 0.70711						
7449-MPC	1	8292	5	-1.	111100	5	1.00000		EM829215	
7450-EM829215		111101		5 0.70711	111102		5 0.00000		EM829225	

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT .	1	..		4	..	6	..			
7451- EM829225			111103		5-0.70711					
7452- MPC	1		8292	6	-1.	111100	6	.0		EM829216
7453- EM829216			111101		6 0.70711	111102		6 1.00000		EM829226
7454- EM829226			111103		6 0.70711					
7455- MPC	1		8293	1	-1.	111100	1	1.00000		EM829311
7456- EM829311			111101		1 0.38268	111102		1-0.70711		EM829321
7457- EM829321			111103		1-0.92388					
7459- MPC	1		8293	2	-1.	111100	2	.0		EM829312
7459- EM829312			111101		2 0.92388	111102		2 0.70711		EM829322
7460- EM829322			111103		2-0.38268					
7461- MPC	1		8293	3	-1.	111100	3	1.00000		EM829313
7462- EM829313			111101		3 0.38268	111102		3-0.70711		EM829323
7463- EM829323			111103		3-0.92388					
7464- MPC	1		8293	4	-1.	111100	4	.0		EM829314
7465- EM829314			111101		4 0.92388	111102		4 0.70711		EM829324
7466- EM829324			111103		4-0.38268					
7467- MPC	1		8293	5	-1.	111100	5	1.00000		EM829315
7468- EM829315			111101		5 0.38268	111102		5-0.70711		EM829325
7469- EM829325			111103		5-0.92388					
7470- MPC	1		8293	6	-1.	111100	6	.0		EM829316
7471- EM829316			111101		6 0.92388	111102		6 0.70711		EM829326
7472- EM829326			111103		6-0.38268					
7473- MPC	1		8294	1	-1.	111100	1	1.00000		EM829411
7474- EM829411			111101		1 0.00000	111102		1-1.00000		EM829421
7475- EM829421			111103		1-0.00000					
7475- MPC	1		8294	2	-1.	111100	2	.0		EM829412
7477- EM829412			111101		2 1.00000	111102		2 0.00000		EM829422
7479- EM829422			111103		2-1.00000					
7479- MPC	1		8294	3	-1.	111100	3	1.00000		EM829413
7490- EM829413			111101		3 0.00000	111102		3-1.00000		EM829423
7491- EM829423			111103		3-0.00000					
7482- MPC	1		8294	4	-1.	111100	4	.0		EM829414
7483- EM829414			111101		4 1.00000	111102		4 0.00000		EM829424
7484- EM829424			111103		4-1.00000					
7485- MPC	1		8294	5	-1.	111100	5	1.00000		EM829415
7486- EM829415			111101		5 0.00000	111102		5-1.00000		EM829425
7487- EM829425			111103		5-0.00000					
7488- MPC	1		8294	6	-1.	111100	6	.0		EM829416
7489- EM829416			111101		6 1.00000	111102		6 0.00000		EM829426
7490- EM829426			111103		6-1.00000					
7491- MPC	1		8295	1	-1.	111100	1	1.00000		EM829511
7492- EM829511			111101		1-0.39268	111102		1-0.70711		EM829521
7493- EM829521			111103		1 0.92388					
7494- MPC	1		8295	2	-1.	111100	2	.0		EM829512
7495- EM829512			111101		2 0.92388	111102		2-0.70711		EM829522
7496- EM829522			111103		2-0.38269					
7497- MPC	1		8295	3	-1.	111100	3	1.00000		EM829513
7499- EM829513			111101		3-0.39268	111102		3-0.70711		EM829523
7499- EM829523			111103		3 0.92388					
7500- MPC	1		8295	4	-1.	111100	4	.0		EM829514

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
7501-EM829514	111101			4	0.92388	111102		4-0.70711		EM829524
7502-EM829524	111103			4	-0.38269					
7503-MPC	1	8295	5		-1.	111100	5	1.00000		EM829515
7504-EM829515	111101			5	-0.38268	111102		5-0.70711		EM829525
7505-EM829525	111103			5	0.92388					
7506-MPC	1	8295	6		-1.	111100	6	.0		EM829516
7507-EM829516	111101			6	0.92388	111102		6-0.70711		EM829526
7508-EM829526	111103			6	-0.38269					
7509-MPC	1	8296	1		-1.	111100	1	1.00000		EM829611
7510-EM829611	111101			1	-0.70711	111102		1-0.00000		EM829621
7511-EM829621	111103			1	0.70711					
7512-MPC	1	8296	2		-1.	111100	2	.0		EM829612
7513-EM829612	111101			2	0.70711	111102		2-1.00000		EM829622
7514-EM829622	111103			2	0.70710					
7515-MPC	1	8296	3		-1.	111100	3	1.00000		EM829613
7516-EM829613	111101			3	-0.70711	111102		3-0.00000		EM829623
7517-EM829623	111103			3	0.70711					
7519-MPC	1	8296	4		-1.	111100	4	.0		EM829614
7519-EM829614	111101			4	0.70711	111102		4-1.00000		EM829624
7520-EM829624	111103			4	0.70710					
7521-MPC	1	8296	5		-1.	111100	5	1.00000		EM829615
7522-EM829615	111101			5	-0.70711	111102		5-0.00000		EM829625
7523-EM829625	111103			5	0.70711					
7524-MPC	1	8296	6		-1.	111100	6	.0		EM829616
7525-EM829616	111101			6	0.70711	111102		6-1.00000		EM829626
7526-EM829626	111103			6	0.70710					
7527-MPC	1	8297	1		-1.	111100	1	1.00000		EM829711
7529-EM829711	111101			1	-0.92388	111102		1 0.70711		EM829721
7529-EM829721	111103			1	-0.38268					
7530-MPC	1	8297	2		-1.	111100	2	.0		EM829712
7531-EM829712	111101			2	0.38268	111102		2-0.70711		EM829722
7532-EM829722	111103			2	0.92388					
7533-MPC	1	8297	3		-1.	111100	3	1.00000		EM829713
7534-EM829713	111101			3	-0.92388	111102		3 0.70711		EM829723
7535-EM829723	111103			3	-0.38268					
7536-MPC	1	8297	4		-1.	111100	4	.0		EM829714
7537-EM829714	111101			4	0.38268	111102		4-0.70711		EM829724
7538-EM829724	111103			4	0.92388					
7539-MPC	1	8297	5		-1.	111100	5	1.00000		EM829715
7540-EM829715	111101			5	-0.92388	111102		5 0.70711		EM829725
7541-EM829725	111103			5	-0.38268					
7542-MPC	1	8297	6		-1.	111100	6	.0		EM829716
7543-EM829716	111101			6	0.38268	111102		6-0.70711		EM829726
7544-EM829726	111103			6	0.92388					
7545-MPC	1	8298	1		-1.	111100	1	1.00000		EM829811
7546-EM829811	111101			1	-1.00000	111102		1 1.00000		EM829821
7547-EM829821	111103			1	-1.00000					
7549-MPC	1	8298	2		-1.	111100	2	.0		EM829812
7549-EM829812	111101			2	0.00000	111102		2-0.00000		EM829822
7550-EM829822	111103			2	0.00000					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
7551- MPC	1	8298	3	-1.	111100	3	1.00000			EM829813	
7552- EM829813		111101		3-1.00000	111102		3 1.00000			EM829823	
7553- EM829823		111103		3-1.00000							
7554- MPC	1	8298	4	-1.	111100	4	.0			EM829814	
7555- EM829814		111101		4 0.00000	111102		4-0.00000			EM829824	
7556- EM829824		111103		4 0.00000							
7557- MPC	1	8298	5	-1.	111100	5	1.00000			EM829815	
7558- EM829815		111101		5-1.00000	111102		5 1.00000			EM829825	
7559- EM829825		111103		5-1.00000							
7560- MPC	1	8298	6	-1.	111100	6	.0			EM829816	
7561- EM829816		111101		6 0.00000	111102		6-0.00000			EM829826	
7562- EM829826		111103		6 0.00000							
7563- MPC	1	8299	1	1.	8294	3	-1.				
7564- MPC	1	8299	3	1.	8294	2	1.				
7565- MPC	1	8310	1	-1.	111200	1	1.00000			EM831011	
7566- EM831011		111201		1 1.00000	111202		1 1.00000			EM831021	
7567- EM831021		111203		1 1.00000							
7568- MPC	1	8310	2	-1.	111200	2	.0			EM831012	
7569- EM831012		111201		2 0.0	111202		2 0.0			EM831022	
7570- EM831022		111203		2 0.0							
7571- MPC	1	8310	3	-1.	111200	3	1.00000			EM831013	
7572- EM831013		111201		3 1.00000	111202		3 1.00000			EM831023	
7573- EM831023		111203		3 1.00000							
7574- MPC	1	8310	4	-1.	111200	4	.0			EM831014	
7575- EM831014		111201		4 0.0	111202		4 0.0			EM831024	
7576- EM831024		111203		4 0.0							
7577- MPC	1	8310	5	-1.	111200	5	1.00000			EM831015	
7578- EM831015		111201		5 1.00000	111202		5 1.00000			EM831025	
7579- EM831025		111203		5 1.00000							
7580- MPC	1	8310	6	-1.	111200	6	.0			EM831016	
7581- EM831016		111201		6 0.0	111202		6 0.0			EM831026	
7582- EM831026		111203		6 0.0							
7583- MPC	1	8311	1	-1.	111200	1	1.00000			EM831111	
7584- EM831111		111201		1 0.92388	111202		1 0.70711			EM831121	
7585- EM831121		111203		1 0.38268							
7586- MPC	1	8311	2	-1.	111200	2	.0			EM831112	
7587- EM831112		111201		2 0.38268	111202		2 0.70711			EM831122	
7588- EM831122		111203		2 0.92388							
7589- MPC	1	8311	3	-1.	111200	3	1.00000			EM831113	
7590- EM831113		111201		3 0.92388	111202		3 0.70711			EM831123	
7591- EM831123		111203		3 0.38268							
7592- MPC	1	8311	4	-1.	111200	4	.0			EM831114	
7593- EM831114		111201		4 0.38268	111202		4 0.70711			EM831124	
7594- EM831124		111203		4 0.92388							
7595- MPC	1	8311	5	-1.	111200	5	1.00000			EM831115	
7596- EM831115		111201		5 0.92388	111202		5 0.70711			EM831125	
7597- EM831125		111203		5 0.38268							
7598- MPC	1	8311	6	-1.	111200	6	.0			EM831116	
7599- EM831116		111201		6 0.38268	111202		6 0.70711			EM831126	
7600- EM831126		111203		6 0.92388							

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CARD	1	2	3	4	5	6	7	8	9	10
CJUNT.	1	..	2	..	3	..	4	..	5	..
7601- MPC	1		8312	1	-1.	111200	1	1.00000		EM831211
7602- EM831211			111201		1 0.70711	111202		1 0.00000		EM831221
7603- EM831221			111203		1-0.70711					
7604- MPC	1		8312	2	-1.	111200	2	.0		EM831212
7605- EM831212			111201		2 0.70711	111202		2 1.00000		EM831222
7606- EM831222			111203		2 0.70711					
7607- MPC	1		8312	3	-1.	111200	3	1.00000		EM831213
7608- EM831213			111201		3 0.70711	111202		3 0.00000		EM831223
7609- EM831223			111203		3-0.70711					
7610- MPC	1		8312	4	-1.	111200	4	.0		EM831214
7611- EM831214			111201		4 0.70711	111202		4 1.00000		EM831224
7612- EM831224			111203		4 0.70711					
7613- MPC	1		8312	5	-1.	111200	5	1.00000		EM831215
7614- EM831215			111201		5 0.70711	111202		5 0.00000		EM831225
7615- EM831225			111203		5-0.70711					
7616- MPC	1		8312	6	-1.	111200	6	.0		EM831216
7617- EM831216			111201		6 0.70711	111202		6 1.00000		EM831226
7618- EM831226			111203		6 0.70711					
7619- MPC	1		8313	1	-1.	111200	1	1.00000		EM831311
7620- EM831311			111201		1 0.38268	111202		1-0.70711		EM831321
7621- EM831321			111203		1-0.92388					
7622- MPC	1		8313	2	-1.	111200	2	.0		EM831312
7623- EM831312			111201		2 0.92388	111202		2 0.70711		EM831322
7624- EM831322			111203		2-0.38268					
7625- MPC	1		8313	3	-1.	111200	3	1.00000		EM831313
7626- EM831313			111201		3 0.38268	111202		3-0.70711		EM831323
7627- EM831323			111203		3-0.92388					
7628- MPC	1		8313	4	-1.	111200	4	.0		EM831314
7629- EM831314			111201		4 0.92388	111202		4 0.70711		EM831324
7630- EM831324			111203		4-0.38268					
7631- MPC	1		8313	5	-1.	111200	5	1.00000		EM831315
7632- EM831315			111201		5 0.38268	111202		5-0.70711		EM831325
7633- EM831325			111203		5-0.92388					
7634- MPC	1		8313	6	-1.	111200	6	.0		EM831316
7635- EM831316			111201		6 0.92388	111202		6 0.70711		EM831326
7636- EM831326			111203		6-0.38268					
7637- MPC	1		8314	1	-1.	111200	1	1.00000		EM831411
7638- EM831411			111201		1 0.00000	111202		1-1.00000		EM831421
7639- EM831421			111203		1-0.00000					
7640- MPC	1		8314	2	-1.	111200	2	.0		EM831412
7641- EM831412			111201		2 1.00000	111202		2 0.00000		EM831422
7642- EM831422			111203		2-1.00000					
7643- MPC	1		8314	3	-1.	111200	3	1.00000		EM831413
7644- EM831413			111201		3 0.00000	111202		3-1.00000		EM831423
7645- EM831423			111203		3-0.00000					
7646- MPC	1		8314	4	-1.	111200	4	.0		EM831414
7647- EM831414			111201		4 1.00000	111202		4 0.00000		EM831424
7648- EM831424			111203		4-1.00000					
7649- MPC	1		8314	5	-1.	111200	5	1.00000		EM831415
7650- EM831415			111201		5 0.00000	111202		5-1.00000		EM831425



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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
7651-EM831425						111203				5-0.00000											
7652-MPC	1			8314		6				-1.		111200	6			.0				EM831416	
7653-EM831416						111201				6 1.00000		111202				6 0.00000				EM831426	
7654-EM831426						111203				6-1.00000											
7655-MPC	1			8315		1				-1.		111200	1			1.00000				EM831511	
7656-EM831511						111201				1-0.38268		111202				1-0.70711				EM831521	
7657-EM831521						111203				1 0.92388											
7658-MPC	1			8315		2				-1.		111200	2			.0				EM831512	
7659-EM831512						111201				2 0.92388		111202				2-0.70711				EM831522	
7660-EM831522						111203				2-0.38269											
7661-MPC	1			8315		3				-1.		111200	3			1.00000				EM831513	
7662-EM831513						111201				3-0.38268		111202				3-0.70711				EM831523	
7663-EM831523						111203				3 0.92388											
7664-MPC	1			8315		4				-1.		111200	4			.0				EM831514	
7665-EM831514						111201				4 0.92388		111202				4-0.70711				EM831524	
7666-EM831524						111203				4-0.38269											
7667-MPC	1			8315		5				-1.		111200	5			1.00000				EM831515	
7668-EM831515						111201				5-0.38268		111202				5-0.70711				EM831525	
7669-EM831525						111203				5 0.92388											
7670-MPC	1			8315		6				-1.		111200	6			.0				EM831516	
7671-EM831516						111201				6 0.92388		111202				6-0.70711				EM831526	
7672-EM831526						111203				6-0.38269											
7673-MPC	1			8316		1				-1.		111200	1			1.00000				EM831611	
7674-EM831611						111201				1-0.70711		111202				1-0.00000				EM831621	
7675-EM831621						111203				1 0.70711											
7676-MPC	1			8316		2				-1.		111200	2			.0				EM831612	
7677-EM831612						111201				2 0.70711		111202				2-1.00000				EM831622	
7678-EM831622						111203				2 0.70710											
7679-MPC	1			8316		3				-1.		111200	3			1.00000				EM831613	
7680-EM831613						111201				3-0.70711		111202				3-0.00000				EM831623	
7681-EM831623						111203				3 0.70711											
7682-MPC	1			8316		4				-1.		111200	4			.0				EM831614	
7683-EM831614						111201				4 0.70711		111202				4-1.00000				EM831624	
7684-EM831624						111203				4 0.70710											
7685-MPC	1			8316		5				-1.		111200	5			1.00000				EM831615	
7686-EM831615						111201				5-0.70711		111202				5-0.00000				EM831625	
7687-EM831625						111203				5 0.70711											
7688-MPC	1			8316		6				-1.		111200	6			.0				EM831616	
7689-EM831616						111201				6 0.70711		111202				6-1.00000				EM831626	
7690-EM831626						111203				6 0.70710											
7691-MPC	1			8317		1				-1.		111200	1			1.00000				EM831711	
7692-EM831711						111201				1-0.92388		111202				1 0.70711				EM831721	
7693-EM831721						111203				1-0.38268											
7694-MPC	1			8317		2				-1.		111200	2			.0				EM831712	
7695-EM831712						111201				2 0.38268		111202				2-0.70711				EM831722	
7696-EM831722						111203				2 0.92388											
7697-MPC	1			8317		3				-1.		111200	3			1.00000				EM831713	
7699-EM831713						111201				3-0.92388		111202				3 0.70711				EM831723	
7699-EM831723						111203				3-0.38268											
7700-MPC	1			8317		4				-1.		111200	4			.0				EM831714	

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CARD	1	2	3	4	5	6	7	8	9	10
7701-EM831714	111201	4 0.38268	111202	4-0.70711	EM831724					
7702-EM831724	111203	4 0.92388								
7703-MPC 1	8317 5	-1.	111200 5	1.00000	EM831715					
7704-EM831715	111201	5-0.92388	111202	5 0.70711	EM831725					
7705-EM831725	111203	5-0.38268								
7706-MPC 1	8317 6	-1.	111200 6	.0	EM831716					
7707-EM831716	111201	6 0.38268	111202	6-0.70711	EM831726					
7708-EM831726	111203	6 0.92388								
7709-MPC 1	8318 1	-1.	111200 1	1.00000	EM831811					
7710-EM831811	111201	1-1.00000	111202	1 1.00000	EM831821					
7711-EM831821	111203	1-1.00000								
7712-MPC 1	8318 2	-1.	111200 2	.0	EM831812					
7713-EM831812	111201	2 0.00000	111202	2-0.00000	EM831822					
7714-EM831822	111203	2 0.00000								
7715-MPC 1	8318 3	-1.	111200 3	1.00000	EM831813					
7716-EM831813	111201	3-1.00000	111202	3 1.00000	EM831823					
7717-EM831823	111203	3-1.00000								
7718-MPC 1	8318 4	-1.	111200 4	.0	EM831814					
7719-EM831814	111201	4 0.00000	111202	4-0.00000	EM831824					
7720-EM831824	111203	4 0.00000								
7721-MPC 1	8318 5	-1.	111200 5	1.00000	EM831815					
7722-EM831815	111201	5-1.00000	111202	5 1.00000	EM831825					
7723-EM831825	111203	5-1.00000								
7724-MPC 1	8318 6	-1.	111200 6	.0	EM831816					
7725-EM831816	111201	6 0.00000	111202	6-0.00000	EM831826					
7726-EM831826	111203	6 0.00000								
7727-MPC 1	8330 1	-1.	111300 1	1.00000	EM833011					
7728-EM833011	111301	1 1.00000	111302	1 1.00000	EM833021					
7729-EM833021	111303	1 1.00000								
7730-MPC 1	8330 2	-1.	111300 2	.0	EM833012					
7731-EM833012	111301	2 0.0	111302	2 0.0	EM833022					
7732-EM833022	111303	2 0.0								
7733-MPC 1	8330 3	-1.	111300 3	1.00000	EM833013					
7734-EM833013	111301	3 1.00000	111302	3 1.00000	EM833023					
7735-EM833023	111303	3 1.00000								
7736-MPC 1	8330 4	-1.	111300 4	.0	EM833014					
7737-EM833014	111301	4 0.0	111302	4 0.0	EM833024					
7739-EM833024	111303	4 0.0								
7739-MPC 1	8330 5	-1.	111300 5	1.00000	EM833015					
7740-EM833015	111301	5 1.00000	111302	5 1.00000	EM833025					
7741-EM833025	111303	5 1.00000								
7742-MPC 1	8330 6	-1.	111300 6	.0	EM833016					
7743-EM833016	111301	6 0.0	111302	6 0.0	EM833026					
7744-EM833026	111303	6 0.0								
7745-MPC 1	8331 1	-1.	111300 1	1.	EM833111					
7746-EM833111	111301 1	.98079	111302 1	.92388	EM833121					
7747-EM833121	111203 1	.83147								
7749-MPC 1	8331 2	-1.	111300 2	0.0	EM833112					
7749-EM833112	111301 2	.19509	111302 2	.38268	EM833122					
7750-EM833122	111303 2	.55557								

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CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
7751-MPC	1	8331	3	-1.	111300	3	1.		EM833113	
7752-EM833113		111301	3	.98079	111302	3	.92388		EM833123	
7753-EM833123		111303	3	.83147						
7754-MPC	1	8331	4	-1.	111300	4	0.0		EM833114	
7755-EM833114		111301	4	.19509	111302	4	.38268		EM833124	
7756-EM833124		111303	4	.55557						
7757-MPC	1	8331	5	-1.	111300	5	1.		EM833115	
7758-EM833115		111301	5	.98079	111302	5	.92388		EM833125	
7759-EM833125		111303	5	.83147						
7760-MPC	1	8331	6	-1.	111300	6	0.0		EM833116	
7761-EM833116		111301	6	.19509	111302	6	.38268		EM833126	
7762-EM833126		111303	6	.55557						
7763-MPC	1	8332	1	-1.	111300	1	1.00000		EM833211	
7764-EM833211		111301		1 0.92388	111302		1 0.70711		EM833221	
7765-EM833221		111303		1 0.38268						
7766-MPC	1	8332	2	-1.	111300	2	.0		EM833212	
7767-EM833212		111301		2 0.38268	111302		2 0.70711		EM833222	
7768-EM833222		111303		2 0.92388						
7769-MPC	1	8332	3	-1.	111300	3	1.00000		EM833213	
7770-EM833213		111301		3 0.92388	111302		3 0.70711		EM833223	
7771-EM833223		111303		3 0.38268						
7772-MPC	1	8332	4	-1.	111300	4	.0		EM833214	
7773-EM833214		111301		4 0.38268	111302		4 0.70711		EM833224	
7774-EM833224		111303		4 0.92388						
7775-MPC	1	8332	5	-1.	111300	5	1.00000		EM833215	
7776-EM833215		111301		5 0.92388	111302		5 0.70711		EM833225	
7777-EM833225		111303		5 0.38268						
7778-MPC	1	8332	6	-1.	111300	6	.0		EM833216	
7779-EM833216		111301		6 0.38268	111302		6 0.70711		EM833226	
7780-EM833226		111303		6 0.92388						
7781-MPC	1	8333	1	-1.	111300	1	1.00000		EM833311	
7782-EM833311		111301		1 0.70711	111302		1 0.00000		EM833321	
7783-EM833321		111303		1-0.70711						
7784-MPC	1	8333	2	-1.	111300	2	.0		EM833312	
7785-EM833312		111301		2 0.70711	111302		2 1.00000		EM833322	
7786-EM833322		111303		2 0.70711						
7787-MPC	1	8333	3	-1.	111300	3	1.00000		EM833313	
7788-EM833313		111301		3 0.70711	111302		3 0.00000		EM833323	
7789-EM833323		111303		3-0.70711						
7790-MPC	1	8333	4	-1.	111300	4	.0		EM833314	
7791-EM833314		111301		4 0.70711	111302		4 1.00000		EM833324	
7792-EM833324		111303		4 0.70711						
7793-MPC	1	8333	5	-1.	111300	5	1.00000		EM833315	
7794-EM833315		111301		5 0.70711	111302		5 0.00000		EM833325	
7795-EM833325		111303		5-0.70711						
7796-MPC	1	8333	6	-1.	111300	6	.0		EM833316	
7797-EM833316		111301		6 0.70711	111302		6 1.00000		EM833326	
7798-EM833326		111303		6 0.70711						
7799-MPC	1	8334	1	-1.	111300	1	1.		EM833411	
7800-EM833411		111301	1	.55557	111302	1	-.38268		EM833421	

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
7801-EM833421	1	111303	1	-1.	111300	2	0.0	EM833412			
7802- MPC	1	8334	2	.83147	111302	2	.92388	EM833422			
7803-EM833412	1	111301	2	.19509							
7804-EM833422	1	111303	2	-1.	111300	3	1.	EM833413			
7805- MPC	1	8334	3	.55557	111302	3	-.38268	EM833423			
7806-EM833413	1	111301	3	-.98079							
7807-EM833423	1	111303	3	-1.	111300	4	0.0	EM833414			
7808- MPC	1	8334	4	.83147	111302	4	.92388	EM833424			
7809-EM833414	1	111301	4	.19509							
7810-EM833424	1	111303	4	-1.	111300	5	1.	EM833415			
7811- MPC	1	8334	5	.55557	111302	5	-.38268	EM833425			
7812-EM833415	1	111301	5	-.98079							
7813-EM833425	1	111303	5	-1.	111300	6	0.0	EM833416			
7814- MPC	1	8334	6	.83147	111302	6	.92388	EM833426			
7815-EM833416	1	111301	6	.19509							
7816-EM833426	1	111303	6	-1.	111300	1	1.00000	EM833511			
7817- MPC	1	8335	1	1 0.38268	111302		1-0.70711	EM833521			
7818-EM833511	1	111301		1-0.92388							
7819-EM833521	1	111303		-1.	111300	2	.0	EM833512			
7820- MPC	1	8335	2	2 0.92388	111302		2 0.70711	EM833522			
7821-EM833512	1	111301		2-0.38268							
7822-EM833522	1	111303		-1.	111300	3	1.00000	EM833513			
7823- MPC	1	8335	3	3 0.38268	111302		3-0.70711	EM833523			
7824-EM833513	1	111301		3-0.92388							
7825-EM833523	1	111303		-1.	111300	4	.0	EM833514			
7826- MPC	1	8335	4	4 0.92388	111302		4 0.70711	EM833524			
7827-EM833514	1	111301		4-0.38268							
7828-EM833524	1	111303		-1.	111300	5	1.00000	EM833515			
7829- MPC	1	8335	5	5 0.38268	111302		5-0.70711	EM833525			
7830-EM833515	1	111301		5-0.92388							
7831-EM833525	1	111303		-1.	111300	6	.0	EM833516			
7832- MPC	1	8335	6	6 0.92388	111302		6 0.70711	EM833526			
7833-EM833516	1	111301		6-0.38268							
7834-EM833526	1	111303		-1.	111300	1	1.00000	EM833611			
7835- MPC	1	8336	1	1 0.00000	111302		1-1.00000	EM833621			
7836-EM833611	1	111301		1-0.00000							
7837-EM833621	1	111303		-1.	111300	2	.0	EM833612			
7838- MPC	1	8336	2	2 1.00000	111302		2 0.00000	EM833622			
7839-EM833612	1	111301		2-1.00000							
7840-EM833622	1	111303		-1.	111300	3	1.00000	EM833613			
7841- MPC	1	8336	3	3 0.00000	111302		3-1.00000	EM833623			
7842-EM833613	1	111301		3-0.00000							
7843-EM833623	1	111303		-1.	111300	4	.0	EM833614			
7844- MPC	1	8336	4	4 1.00000	111302		4 0.00000	EM833624			
7845-EM833614	1	111301		4-1.00000							
7846-EM833624	1	111303		-1.	111300	5	1.00000	EM833615			
7847- MPC	1	8336	5	5 0.00000	111302		5-1.00000	EM833625			
7848-EM833615	1	111301		5-0.00000							
7849-EM833625	1	111303		-1.	111300	6	.0	EM833616			
7850- MPC	1	8336	6								

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
7851-EM833616						111301				6 1.00000		111302				6 0.00000				EM833626	
7852-EM833626						111303				6-1.00000											
7853-MPC	1			8337	1					-1.		111300	1			1.00000				EM833711	
7854-EM833711						111301				1-0.38268		111302				1-0.70711				EM833721	
7855-EM833721						111303				1 0.92388											
7856-MPC	1			8337	2					-1.		111300	2			.0				EM833712	
7857-EM833712						111301				2 0.92388		111302				2-0.70711				EM833722	
7858-EM833722						111303				2-0.38269											
7859-MPC	1			8337	3					-1.		111300	3			1.00000				EM833713	
7860-EM833713						111301				3-0.38268		111302				3-0.70711				EM833723	
7861-EM833723						111303				3 0.92388											
7862-MPC	1			8337	4					-1.		111300	4			.0				EM833714	
7863-EM833714						111301				4 0.92388		111302				4-0.70711				EM833724	
7864-EM833724						111303				4-0.38269											
7865-MPC	1			8337	5					-1.		111300	5			1.00000				EM833715	
7866-EM833715						111301				5-0.38268		111302				5-0.70711				EM833725	
7867-EM833725						111303				5 0.92388											
7869-MPC	1			8337	6					-1.		111300	6			.0				EM833716	
7869-EM833716						111301				6 0.92388		111302				6-0.70711				EM833726	
7870-EM833726						111303				6-0.38269											
7871-MPC	1			8338	1					-1.		111300	1			1.00000				EM833811	
7872-EM833811						111301				1-0.70711		111302				1-0.00000				EM833821	
7873-EM833821						111303				1 0.70711											
7874-MPC	1			8338	2					-1.		111300	2			.0				EM833812	
7875-EM833812						111301				2 0.70711		111302				2-1.00000				EM833822	
7876-EM833822						111303				2 0.70710											
7877-MPC	1			8338	3					-1.		111300	3			1.00000				EM833813	
7878-EM833813						111301				3-0.70711		111302				3-0.00000				EM833823	
7879-EM833823						111303				3 0.70711											
7880-MPC	1			8338	4					-1.		111300	4			.0				EM833814	
7891-EM833814						111301				4 0.70711		111302				4-1.00000				EM833824	
7882-EM833824						111303				4 0.70710											
7893-MPC	1			8338	5					-1.		111300	5			1.00000				EM833815	
7894-EM833815						111301				5-0.70711		111302				5-0.00000				EM833825	
7885-EM833825						111303				5 0.70711											
7886-MPC	1			8338	6					-1.		111300	6			.0				EM833816	
7887-EM833816						111301				6 0.70711		111302				6-1.00000				EM833826	
7889-EM833826						111303				6 0.70710											
7889-MPC	1			8339	1					-1.		111300	1			1.00000				EM833911	
7890-EM833911						111301				1-0.92388		111302				1 0.70711				EM833921	
7891-EM833921						111303				1-0.38268											
7892-MPC	1			8339	2					-1.		111300	2			.0				EM833912	
7893-EM833912						111301				2 0.38268		111302				2-0.70711				EM833922	
7894-EM833922						111303				2 0.92388											
7895-MPC	1			8339	3					-1.		111300	3			1.00000				EM833913	
7896-EM833913						111301				3-0.92388		111302				3 0.70711				EM833923	
7897-EM833923						111303				3-0.38268											
7898-MPC	1			8339	4					-1.		111300	4			.0				EM833914	
7899-EM833914						111301				4 0.38268		111302				4-0.70711				EM833924	
7900-EM833924						111303				4 0.92388											

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
7901- MPC	1	8339	5	-1.	111300	5	1.00000		EM833915	
7902- EM833915		111301		5-0.92388	111302		5 0.70711		EM833925	
7903- EM833925		111303		5-0.38268						
7904- MPC	1	8339	6	-1.	111300	6	.0		EM833916	
7905- EM833916		111301		6 0.38268	111302		6-0.70711		EM833926	
7906- EM833926		111303		6 0.92388						
7907- MPC	1	8340	1	-1.	111300	1	1.00000		EM834011	
7908- EM834011		111301		1-1.00000	111302		1 1.00000		EM834021	
7909- EM834021		111303		1-1.00000						
7910- MPC	1	8340	2	-1.	111300	2	.0		EM834012	
7911- EM834012		111301		2 0.00000	111302		2-0.00000		EM834022	
7912- EM834022		111303		2 0.00000						
7913- MPC	1	8340	3	-1.	111300	3	1.00000		EM834013	
7914- EM834013		111301		3-1.00000	111302		3 1.00000		EM834023	
7915- EM834023		111303		3-1.00000						
7916- MPC	1	8340	4	-1.	111300	4	.0		EM834014	
7917- EM834014		111301		4 0.00000	111302		4-0.00000		EM834024	
7918- EM834024		111303		4 0.00000						
7919- MPC	1	8340	5	-1.	111300	5	1.00000		EM834015	
7920- EM834015		111301		5-1.00000	111302		5 1.00000		EM834025	
7921- EM834025		111303		5-1.00000						
7922- MPC	1	8340	6	-1.	111300	6	.0		EM834016	
7923- EM834016		111301		6 0.00000	111302		6-0.00000		EM834026	
7924- EM834026		111303		6 0.00000						
7925- MPC	1	8341	1	1.	8336	3	-1.			
7926- MPC	1	8341	3	1.	8336	2	1.			
7927- MPC	1	8359	1	1.	8352	1	-1.			
7928- MPC	1	8359	3	1.	8352	2	.197328		EM8359Z	
7929- EM8359Z		8352	3	-.980338						
7930- MPC	1	8360	1	1.	8355	1	-1.			
7931- MPC	1	8360	3	1.	8355	2	.197328		EM8360Z	
7932- EM8360Z		8355	3	-.980338						
7933- MPC	1	8370	1	-1.	111400	1	1.00000		EM837011	
7934- EM837011		111401		1 1.00000	111402		1 1.00000		EM837021	
7935- EM837021		111403		1 1.00000						
7936- MPC	1	8370	2	-1.	111400	2	1.00000		EM837012	
7937- EM837012		111401		2 1.00000	111402		2 1.00000		EM837022	
7938- EM837022		111403		2 1.00000						
7939- MPC	1	8370	3	-1.	111400	3	.0		EM837013	
7940- EM837013		111401		3 0.0	111402		3 0.0		EM837023	
7941- EM837023		111403		3 0.0						
7942- MPC	1	8370	4	-1.	111400	4	.0		EM837014	
7943- EM837014		111401		4 0.0	111402		4 0.0		EM837024	
7944- EM837024		111403		4 0.0						
7945- MPC	1	8370	5	-1.	111400	5	.0		EM837015	
7946- EM837015		111401		5 0.0	111402		5 0.0		EM837025	
7947- EM837025		111403		5 0.0						
7948- MPC	1	8370	6	-1.	111400	6	1.00000		EM837016	
7949- EM837016		111401		6 1.00000	111402		6 1.00000		EM837026	
7950- EM837026		111403		6 1.00000						

## S O R T E D B U L K D A T A E C H O

CARD	1	2	3	4	5	6	7	8	9	10
7951- MPC	1	8371	1	-1.	111400	1	1.00000		EM837111	
7952- EM837111		111401		1 0.92388	111402		1 0.70711		EM837121	
7953- EM837121		111403		1 0.38268						
7954- MPC	1	8371	2	-1.	111400	2	1.00000		EM837112	
7955- EM837112		111401		2 0.92388	111402		2 0.70711		EM837122	
7956- EM837122		111403		2 0.38268						
7957- MPC	1	8371	3	-1.	111400	3	.0		EM837113	
7958- EM837113		111401		3 0.38268	111402		3 0.70711		EM837123	
7959- EM837123		111403		3 0.92388						
7960- MPC	1	8371	4	-1.	111400	4	.0		EM837114	
7961- EM837114		111401		4 0.38268	111402		4 0.70711		EM837124	
7962- EM837124		111403		4 0.92388						
7963- MPC	1	8371	5	-1.	111400	5	.0		EM837115	
7964- EM837115		111401		5 0.38268	111402		5 0.70711		EM837125	
7965- EM837125		111403		5 0.92388						
7966- MPC	1	8371	6	-1.	111400	6	1.00000		EM837116	
7967- EM837116		111401		6 0.92388	111402		6 0.70711		EM837126	
7968- EM837126		111403		6 0.38268						
7969- MPC	1	8372	1	-1.	111400	1	1.00000		EM837211	
7970- EM837211		111401		1 0.70711	111402		1 0.00000		EM837221	
7971- EM837221		111403		1-0.70711						
7972- MPC	1	8372	2	-1.	111400	2	1.00000		EM837212	
7973- EM837212		111401		2 0.70711	111402		2 0.00000		EM837222	
7974- EM837222		111403		2-0.70711						
7975- MPC	1	8372	3	-1.	111400	3	.0		EM837213	
7975- EM837213		111401		3 0.70711	111402		3 1.00000		EM837223	
7977- EM837223		111403		3 0.70711						
7978- MPC	1	8372	4	-1.	111400	4	.0		EM837214	
7979- EM837214		111401		4 0.70711	111402		4 1.00000		EM837224	
7980- EM837224		111403		4 0.70711						
7981- MPC	1	8372	5	-1.	111400	5	.0		EM837215	
7982- EM837215		111401		5 0.70711	111402		5 1.00000		EM837225	
7983- EM837225		111403		5 0.70711						
7984- MPC	1	8372	6	-1.	111400	6	1.00000		EM837216	
7985- EM837216		111401		6 0.70711	111402		6 0.00000		EM837226	
7985- EM837226		111403		6-0.70711						
7987- MPC	1	8373	1	-1.	111400	1	1.00000		EM837311	
7988- EM837311		111401		1 0.38268	111402		1-0.70711		EM837321	
7989- EM837321		111403		1-0.92388						
7990- MPC	1	8373	2	-1.	111400	2	1.00000		EM837312	
7991- EM837312		111401		2 0.38268	111402		2-0.70711		EM837322	
7992- EM837322		111403		2-0.92388						
7993- MPC	1	8373	3	-1.	111400	3	.0		EM837313	
7994- EM837313		111401		3 0.92388	111402		3 0.70711		EM837323	
7995- EM837323		111403		3-0.38268						
7996- MPC	1	8373	4	-1.	111400	4	.0		EM837314	
7997- EM837314		111401		4 0.92388	111402		4 0.70711		EM837324	
7998- EM837324		111403		4-0.38268						
7999- MPC	1	8373	5	-1.	111400	5	.0		EM837315	
8000- EM837315		111401		5 0.92388	111402		5 0.70711		EM837325	

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CARD	COUNT.	1	2	3	4	5	6	7	8	9	10
9001-EM837325			111403		5-0.38268						
9002-MPC	1	8373	6		-1.	111400	6		1.00000		EM837316
9003-EM837316			111401		6 0.38268	111402			6-0.70711		EM837326
9004-EM837326			111403		6-0.92388						
9005-MPC	1	8374	1		-1.	111400	1		1.00000		EM837411
9006-EM837411			111401		1 0.00000	111402			1-1.00000		EM837421
9007-EM837421			111403		1-0.00000						
9009-MPC	1	8374	2		-1.	111400	2		1.00000		EM837412
9009-EM837412			111401		2 0.00000	111402			2-1.00000		EM837422
9010-EM837422			111403		2-0.00000						
9011-MPC	1	8374	3		-1.	111400	3		.0		EM837413
9012-EM837413			111401		3 1.00000	111402			3 0.00000		EM837423
9013-EM837423			111403		3-1.00000						
9014-MPC	1	8374	4		-1.	111400	4		.0		EM837414
9015-EM837414			111401		4 1.00000	111402			4 0.00000		EM837424
9016-EM837424			111403		4-1.00000						
9017-MPC	1	8374	5		-1.	111400	5		.0		EM837415
9018-EM837415			111401		5 1.00000	111402			5 0.00000		EM837425
9019-EM837425			111403		5-1.00000						
9020-MPC	1	8374	6		-1.	111400	6		1.00000		EM837416
9021-EM837416			111401		6 0.00000	111402			6-1.00000		EM837426
9022-EM837426			111403		6-0.00000						
9023-MPC	1	8375	1		-1.	111400	1		1.00000		EM837511
9024-EM837511			111401		1-0.38268	111402			1-0.70711		EM837521
9025-EM837521			111403		1 0.92388						
9025-MPC	1	8375	2		-1.	111400	2		1.00000		EM837512
9027-EM837512			111401		2-0.38268	111402			2-0.70711		EM837522
9028-EM837522			111403		2 0.92388						
9029-MPC	1	8375	3		-1.	111400	3		.0		EM837513
9030-EM837513			111401		3 0.92388	111402			3-0.70711		EM837523
9031-EM837523			111403		3-0.38269						
9032-MPC	1	8375	4		-1.	111400	4		.0		EM837514
9033-EM837514			111401		4 0.92388	111402			4-0.70711		EM837524
9034-EM837524			111403		4-0.38269						
9035-MPC	1	8375	5		-1.	111400	5		.0		EM837515
9036-EM837515			111401		5 0.92388	111402			5-0.70711		EM837525
9037-EM837525			111403		5-0.38269						
9038-MPC	1	8375	6		-1.	111400	6		1.00000		EM837516
9039-EM837516			111401		6-0.38268	111402			6-0.70711		EM837526
9040-EM837526			111403		6 0.92388						
9041-MPC	1	8376	1		-1.	111400	1		1.00000		EM837611
9042-EM837611			111401		1-0.70711	111402			1-0.00000		EM837621
9043-EM837621			111403		1 0.70711						
9044-MPC	1	8376	2		-1.	111400	2		1.00000		EM837612
9045-EM837612			111401		2-0.70711	111402			2-0.00000		EM837622
9046-EM837622			111403		2 0.70711						
9047-MPC	1	8376	3		-1.	111400	3		.0		EM837613
9048-EM837613			111401		3 0.70711	111402			3-1.00000		EM837623
9049-EM837623			111403		3 0.70710						
9050-MPC	1	8376	4		-1.	111400	4		.0		EM837614



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CARD	COUNT.	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 ..
8051-EM837614				111401		4 0.70711	111402		4-1.00000		EM837624
8052-EM837624				111403		4 0.70710					
8053-MPC	1		8376	5		-1.	111400	5	.0		EM837615
8054-EM837615				111401		5 0.70711	111402		5-1.00000		EM837625
8055-EM837625				111403		5 0.70710					
8055-MPC	1		8376	6		-1.	111400	6	1.00000		EM837616
8057-EM837616				111401		6-0.70711	111402		6-0.00000		EM837626
8059-EM837626				111403		6 0.70711					
8059-MPC	1		8377	1		-1.	111400	1	1.00000		EM837711
8060-EM837711				111401		1-0.92388	111402		1 0.70711		EM837721
8061-EM837721				111403		1-0.38268					
8062-MPC	1		8377	2		-1.	111400	2	1.00000		EM837712
8063-EM837712				111401		2-0.92388	111402		2 0.70711		EM837722
8064-EM837722				111403		2-0.38268					
8065-MPC	1		8377	3		-1.	111400	3	.0		EM837713
8066-EM837713				111401		3 0.38268	111402		3-0.70711		EM837723
8067-EM837723				111403		3 0.92388					
8068-MPC	1		8377	4		-1.	111400	4	.0		EM837714
8069-EM837714				111401		4 0.38268	111402		4-0.70711		EM837724
8070-EM837724				111403		4 0.92388					
8071-MPC	1		8377	5		-1.	111400	5	.0		EM837715
8072-EM837715				111401		5 0.38268	111402		5-0.70711		EM837725
8073-EM837725				111403		5 0.92388					
8074-MPC	1		8377	6		-1.	111400	6	1.00000		EM837716
8075-EM837716				111401		6-0.92388	111402		6 0.70711		EM837726
8076-EM837726				111403		6-0.38268					
8077-MPC	1		8378	1		-1.	111400	1	1.00000		EM837811
8078-EM837811				111401		1-1.00000	111402		1 1.00000		EM837821
8079-EM837821				111403		1-1.00000					
8080-MPC	1		8378	2		-1.	111400	2	1.00000		EM837812
8081-EM837812				111401		2-1.00000	111402		2 1.00000		EM837822
8082-EM837822				111403		2-1.00000					
8083-MPC	1		8378	3		-1.	111400	3	.0		EM837813
8084-EM837813				111401		3 0.00000	111402		3-0.00000		EM837823
8085-EM837823				111403		3 0.00000					
8086-MPC	1		8378	4		-1.	111400	4	.0		EM837814
8087-EM837814				111401		4 0.00000	111402		4-0.00000		EM837824
8088-EM837824				111403		4 0.00000					
8089-MPC	1		8378	5		-1.	111400	5	.0		EM837815
8090-EM837815				111401		5 0.00000	111402		5-0.00000		EM837825
8091-EM837825				111403		5 0.00000					
8092-MPC	1		8378	6		-1.	111400	6	1.00000		EM837816
8093-EM837816				111401		6-1.00000	111402		6 1.00000		EM837826
8094-EM837826				111403		6-1.00000					
8095-MPC	1		8390	1		-1.	111500	1	1.00000		EM839011
8096-EM839011				111501		1 1.00000	111502		1 1.00000		EM839021
8097-EM839021				111503		1 1.00000					
8098-MPC	1		8390	2		-1.	111500	2	1.00000		EM839012
8099-EM839012				111501		2 1.00000	111502		2 1.00000		EM839022
9100-EM839022				111503		2 1.00000					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
8101-MPC	1	8390	3	-1.	111500	3	.0			EM839013	
8102-EM839013		111501	3	0.0	111502	3	0.0			EM839023	
8103-EM839023		111503	3	0.0							
8104-MPC	1	8390	4	-1.	111500	4	.0			EM839014	
8105-EM839014		111501	4	0.0	111502	4	0.0			EM839024	
8106-EM839024		111503	4	0.0							
8107-MPC	1	8390	5	-1.	111500	5	.0			EM839015	
8108-EM839015		111501	5	0.0	111502	5	0.0			EM839025	
8109-EM839025		111503	5	0.0							
8110-MPC	1	8390	6	-1.	111500	6	1.00000			EM839016	
8111-EM839016		111501	6	1.00000	111502	6	1.00000			EM839026	
8112-EM839026		111503	6	1.00000							
8113-MPC	1	8391	1	-1.	111500	1	1.00000			EM839111	
8114-EM839111		111501	1	0.92388	111502	1	0.70711			EM839121	
8115-EM839121		111503	1	0.38268							
8116-MPC	1	8391	2	-1.	111500	2	1.00000			EM839112	
8117-EM839112		111501	2	0.92388	111502	2	0.70711			EM839122	
8118-EM839122		111503	2	0.38268							
8119-MPC	1	8391	3	-1.	111500	3	.0			EM839113	
8120-EM839113		111501	3	0.38268	111502	3	0.70711			EM839123	
8121-EM839123		111503	3	0.92388							
8122-MPC	1	8391	4	-1.	111500	4	.0			EM839114	
8123-EM839114		111501	4	0.38268	111502	4	0.70711			EM839124	
8124-EM839124		111503	4	0.92388							
8125-MPC	1	8391	5	-1.	111500	5	.0			EM839115	
8126-EM839115		111501	5	0.38268	111502	5	0.70711			EM839125	
8127-EM839125		111503	5	0.92388							
8128-MPC	1	8391	6	-1.	111500	6	1.00000			EM839116	
8129-EM839116		111501	6	0.92388	111502	6	0.70711			EM839126	
8130-EM839126		111503	6	0.38268							
8131-MPC	1	8392	1	-1.	111500	1	1.00000			EM839211	
8132-EM839211		111501	1	0.70711	111502	1	0.00000			EM839221	
8133-EM839221		111503	1	0.70711							
8134-MPC	1	8392	2	-1.	111500	2	1.00000			EM839212	
8135-EM839212		111501	2	0.70711	111502	2	0.00000			EM839222	
8136-EM839222		111503	2	0.70711							
8137-MPC	1	8392	3	-1.	111500	3	.0			EM839213	
8138-EM839213		111501	3	0.70711	111502	3	1.00000			EM839223	
8139-EM839223		111503	3	0.70711							
8140-MPC	1	8392	4	-1.	111500	4	.0			EM839214	
8141-EM839214		111501	4	0.70711	111502	4	1.00000			EM839224	
8142-EM839224		111503	4	0.70711							
8143-MPC	1	8392	5	-1.	111500	5	.0			EM839215	
8144-EM839215		111501	5	0.70711	111502	5	1.00000			EM839225	
8145-EM839225		111503	5	0.70711							
8146-MPC	1	8392	6	-1.	111500	6	1.00000			EM839216	
8147-EM839216		111501	6	0.70711	111502	6	0.00000			EM839226	
8148-EM839226		111503	6	0.70711							
8149-MPC	1	8392	1	-1.	111500	1	1.00000			EM839311	
8150-EM839311		111501	1	0.38268	111502	1	0.70711			EM839321	

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CARD	COUNT.	1	..	2	..	3	..	4	..	5	..	6	..	7	..	8	..	9	..	10	.
9151-EM839321						111503				1-0.92388											
8152-MPC	1			8393		2				-1.		111500	2			1.00000				EM839312	
8153-EM839312						111501				2	0.38268	111502				2-0.70711				EM839322	
8154-EM839322						111503				2-0.92388											
8155-MPC	1			8393		3				-1.		111500	3			.0				EM839313	
8156-EM839313						111501				3	0.92388	111502				3	0.70711			EM839323	
8157-EM839323						111503				3-0.38268											
8158-MPC	1			8393		4				-1.		111500	4			.0				EM839314	
8159-EM839314						111501				4	0.92388	111502				4	0.70711			EM839324	
9160-EM839324						111503				4-0.38268											
9161-MPC	1			8393		5				-1.		111500	5			.0				EM839315	
9162-EM839315						111501				5	0.92388	111502				5	0.70711			EM839325	
9163-EM839325						111503				5-0.38268											
8164-MPC	1			8393		6				-1.		111500	6			1.00000				EM839316	
9165-EM839316						111501				6	0.38268	111502				6-0.70711				EM839326	
9166-EM839326						111503				6-0.92388											
9167-MPC	1			8394		1				-1.		111500	1			1.00000				EM839411	
9168-EM839411						111501				1	0.00000	111502				1-1.00000				EM839421	
8169-EM839421						111503				1-0.00000											
8170-MPC	1			8394		2				-1.		111500	2			1.00000				EM839412	
8171-EM839412						111501				2	0.00000	111502				2-1.00000				EM839422	
8172-EM839422						111503				2-0.00000											
8173-MPC	1			8394		3				-1.		111500	3			.0				EM839413	
8174-EM839413						111501				3	1.00000	111502				3	0.00000			EM839423	
8175-EM839423						111503				3-1.00000											
8176-MPC	1			8394		4				-1.		111500	4			.0				EM839414	
8177-EM839414						111501				4	1.00000	111502				4	0.00000			EM839424	
8178-EM839424						111503				4-1.00000											
8179-MPC	1			8394		5				-1.		111500	5			.0				EM839415	
8180-EM839415						111501				5	1.00000	111502				5	0.00000			EM839425	
8181-EM839425						111503				5-1.00000											
9182-MPC	1			8394		6				-1.		111500	6			1.00000				EM839416	
9183-EM839416						111501				6	0.00000	111502				6-1.00000				EM839426	
9184-EM839426						111503				6-0.00000											
8185-MPC	1			8395		1				-1.		111500	1			1.00000				EM839511	
8186-EM839511						111501				1-0.38268		111502				1-0.70711				EM839521	
8187-EM839521						111503				1	0.92388										
9188-MPC	1			8395		2				-1.		111500	2			1.00000				EM839512	
9189-EM839512						111501				2-0.38268		111502				2-0.70711				EM839522	
9190-EM839522						111503				2	0.92388										
9191-MPC	1			8395		3				-1.		111500	3			.0				EM839513	
9192-EM839513						111501				3	0.92388	111502				3-0.70711				EM839523	
9193-EM839523						111503				3-0.38269											
9194-MPC	1			8395		4				-1.		111500	4			.0				EM839514	
8195-EM839514						111501				4	0.92388	111502				4-0.70711				EM839524	
8196-EM839524						111503				4-0.38269											
9197-MPC	1			8395		5				-1.		111500	5			.0				EM839515	
9198-EM839515						111501				5	0.92388	111502				5-0.70711				EM839525	
9199-EM839525						111503				5-0.38269											
9200-MPC	1			8395		6				-1.		111500	6			1.00000				EM839516	

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CARD	1	2	3	4	5	6	7	8	9	10
CJUNT	1	2	3	4	5	6	7	8	9	10
9201- EM839516			111501		6-0.38268	111502		6-0.70711		EM839526
9202- EM839526			111503		6 0.92388					
9203- MPC 1		8396	1		-1.	111500 1		1.00000		EM839611
9204- EM839611			111501		1-0.70711	111502		1-0.00000		EM839621
9205- EM839621			111503		1 0.70711					
9206- MPC 1		8396	2		-1.	111500 2		1.00000		EM839612
9207- EM839612			111501		2-0.70711	111502		2-0.00000		EM839622
9208- EM839622			111503		2 0.70711					
9209- MPC 1		8396	3		-1.	111500 3		.0		EM839613
9210- EM839613			111501		3 0.70711	111502		3-1.00000		EM839623
9211- EM839623			111503		3 0.70710					
9212- MPC 1		8396	4		-1.	111500 4		.0		EM839614
9213- EM839614			111501		4 0.70711	111502		4-1.00000		EM839624
9214- EM839624			111503		4 0.70710					
9215- MPC 1		8396	5		-1.	111500 5		.0		EM839615
9216- EM839615			111501		5 0.70711	111502		5-1.00000		EM839625
9217- EM839625			111503		5 0.70710					
9218- MPC 1		8396	6		-1.	111500 6		1.00000		EM839616
9219- EM839616			111501		6-0.70711	111502		6-0.00000		EM839626
9220- EM839626			111503		6 0.70711					
9221- MPC 1		8397	1		-1.	111500 1		1.00000		EM839711
9222- EM839711			111501		1-0.92388	111502		1 0.70711		EM839721
9223- EM839721			111503		1-0.38268					
9224- MPC 1		8397	2		-1.	111500 2		1.00000		EM839712
9225- EM839712			111501		2-0.92388	111502		2 0.70711		EM839722
9226- EM839722			111503		2-0.38268					
9227- MPC 1		8397	3		-1.	111500 3		.0		EM839713
9228- EM839713			111501		3 0.38268	111502		3-0.70711		EM839723
9229- EM839723			111503		3 0.92388					
9230- MPC 1		8397	4		-1.	111500 4		.0		EM839714
9231- EM839714			111501		4 0.38268	111502		4-0.70711		EM839724
9232- EM839724			111503		4 0.92388					
9233- MPC 1		8397	5		-1.	111500 5		.0		EM839715
9234- EM839715			111501		5 0.38268	111502		5-0.70711		EM839725
9235- EM839725			111503		5 0.92388					
9236- MPC 1		8397	6		-1.	111500 6		1.00000		EM839716
9237- EM839716			111501		6-0.92388	111502		6 0.70711		EM839726
9238- EM839726			111503		6-0.38268					
9239- MPC 1		8398	1		-1.	111500 1		1.00000		EM839811
9240- EM839811			111501		1-1.00000	111502		1 1.00000		EM839821
9241- EM839821			111503		1-1.00000					
9242- MPC 1		8398	2		-1.	111500 2		1.00000		EM839812
9243- EM839812			111501		2-1.00000	111502		2 1.00000		EM839822
9244- EM839822			111503		2-1.00000					
9245- MPC 1		8398	3		-1.	111500 3		.0		EM839813
9246- EM839813			111501		3 0.00000	111502		3-0.00000		EM839823
9247- EM839823			111503		3 0.00000					
9248- MPC 1		8398	4		-1.	111500 4		.0		EM839814
9249- EM839814			111501		4 0.00000	111502		4-0.00000		EM839824
9250- EM839824			111503		4 0.00000					

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
8251-	MPC	1	8398	5	-1.	111500	5	.0			EM839815
8252-	EM839815		111501		5 0.00000	111502		5-0.00000			EM839825
8253-	EM839825		111503		5 0.00000						
8254-	MPC	1	8398	6	-1.	111500	6	1.00000			EM839816
8255-	EM839816		111501		6-1.00000	111502		6 1.00000			EM839826
8256-	EM839826		111503		6-1.00000						
8257-	MPC	1	8410	1	-1.	111600	1	1.00000			EM841011
8258-	EM841011		111601		1 1.00000	111602		1 1.00000			EM841021
8259-	EM841021		111603		1 1.00000						
8260-	MPC	1	8410	2	-1.	111600	2	1.00000			EM841012
8261-	EM841012		111601		2 1.00000	111602		2 1.00000			EM841022
8262-	EM841022		111603		2 1.00000						
8263-	MPC	1	8410	3	-1.	111600	3	.0			EM841013
8264-	EM841013		111601		3 0.0	111602		3 0.0			EM841023
8265-	EM841023		111603		3 0.0						
8266-	MPC	1	8410	4	-1.	111600	4	.0			EM841014
8267-	EM841014		111601		4 0.0	111602		4 0.0			EM841024
8268-	EM841024		111603		4 0.0						
8269-	MPC	1	8410	5	-1.	111600	5	.0			EM841015
8270-	EM841015		111601		5 0.0	111602		5 0.0			EM841025
8271-	EM841025		111603		5 0.0						
8272-	MPC	1	8410	6	-1.	111600	6	1.00000			EM841016
8273-	EM841016		111601		6 1.00000	111602		6 1.00000			EM841026
8274-	EM841026		111603		6 1.00000						
8275-	MPC	1	8411	1	-1.	111600	1	1.00000			EM841111
8276-	EM841111		111601		1 0.92388	111602		1 0.70711			EM841121
8277-	EM841121		111603		1 0.38268						
8278-	MPC	1	8411	2	-1.	111600	2	1.00000			EM841112
8279-	EM841112		111601		2 0.92388	111602		2 0.70711			EM841122
8280-	EM841122		111603		2 0.38268						
8281-	MPC	1	8411	3	-1.	111600	3	.0			EM841113
8282-	EM841113		111601		3 0.38268	111602		3 0.70711			EM841123
8283-	EM841123		111603		3 0.92388						
8284-	MPC	1	8411	4	-1.	111600	4	.0			EM841114
8285-	EM841114		111601		4 0.38268	111602		4 0.70711			EM841124
8286-	EM841124		111603		4 0.92388						
8287-	MPC	1	8411	5	-1.	111600	5	.0			EM841115
8288-	EM841115		111601		5 0.38268	111602		5 0.70711			EM841125
8289-	EM841125		111603		5 0.92388						
8290-	MPC	1	8411	6	-1.	111600	6	1.00000			EM841116
8291-	EM841116		111601		6 0.92388	111602		6 0.70711			EM841126
8292-	EM841126		111603		6 0.38268						
8293-	MPC	1	8412	1	-1.	111600	1	1.00000			EM841211
8294-	EM841211		111601		1 0.70711	111602		1 0.00000			EM841221
8295-	EM841221		111603		1-0.70711						
8296-	MPC	1	8412	2	-1.	111600	2	1.00000			EM841212
8297-	EM841212		111601		2 0.70711	111602		2 0.00000			EM841222
8298-	EM841222		111603		2-0.70711						
8299-	MPC	1	8412	3	-1.	111600	3	.0			EM841213
8300-	EM841213		111601		3 0.70711	111602		3 1.00000			EM841223

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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
8301-EM841223		111603			3	0.70711					
8302-MPC	1	8412	4		-1.	111600	4		.0		EM841214
9303-EM841214		111601			4	0.70711	111602		4	1.00000	EM841224
9304-EM841224		111603			4	0.70711					
8305-MPC	1	8412	5		-1.	111600	5		.0		EM841215
8306-EM841215		111601			5	0.70711	111602		5	1.00000	EM841225
8307-EM841225		111603			5	0.70711					
9308-MPC	1	8412	6		-1.	111600	6		1.00000		EM841216
8309-EM841216		111601			6	0.70711	111602		6	0.00000	EM841226
8310-EM841226		111603			6	0.70711					
8311-MPC	1	8413	1		-1.	111600	1		1.00000		EM841311
8312-EM841311		111601			1	0.38268	111602		1	0.70711	EM841321
8313-EM841321		111603			1	0.92388					
8314-MPC	1	8413	2		-1.	111600	2		1.00000		EM841312
8315-EM841312		111601			2	0.38268	111602		2	0.70711	EM841322
8316-EM841322		111603			2	0.92388					
8317-MPC	1	8413	3		-1.	111600	3		.0		EM841313
8318-EM841313		111601			3	0.92388	111602		3	0.70711	EM841323
8319-EM841323		111603			3	0.38268					
8320-MPC	1	8413	4		-1.	111600	4		.0		EM841314
8321-EM841314		111601			4	0.92388	111602		4	0.70711	EM841324
8322-EM841324		111603			4	0.38268					
8323-MPC	1	8413	5		-1.	111600	5		.0		EM841315
8324-EM841315		111601			5	0.92388	111602		5	0.70711	EM841325
8325-EM841325		111603			5	0.38268					
8326-MPC	1	8413	6		-1.	111600	6		1.00000		EM841316
8327-EM841316		111601			6	0.38268	111602		6	0.70711	EM841326
8328-EM841326		111603			6	0.92388					
8329-MPC	1	8414	1		-1.	111600	1		1.00000		EM841411
8330-EM841411		111601			1	0.00000	111602		1	1.00000	EM841421
8331-EM841421		111603			1	0.00000					
8332-MPC	1	8414	2		-1.	111600	2		1.00000		EM841412
8333-EM841412		111601			2	0.00000	111602		2	1.00000	EM841422
8334-EM841422		111603			2	0.00000					
8335-MPC	1	8414	3		-1.	111600	3		.0		EM841413
8336-EM841413		111601			3	1.00000	111602		3	0.00000	EM841423
8337-EM841423		111603			3	1.00000					
8338-MPC	1	8414	4		-1.	111600	4		.0		EM841414
8339-EM841414		111601			4	1.00000	111602		4	0.00000	EM841424
8340-EM841424		111603			4	1.00000					
8341-MPC	1	8414	5		-1.	111600	5		.0		EM841415
8342-EM841415		111601			5	1.00000	111602		5	0.00000	EM841425
8343-EM841425		111603			5	1.00000					
8344-MPC	1	8414	6		-1.	111600	6		1.00000		EM841416
8345-EM841416		111601			6	0.00000	111602		6	1.00000	EM841426
8346-EM841426		111603			6	0.00000					
8347-MPC	1	8415	1		-1.	111600	1		1.00000		EM841511
8348-EM841511		111601			1	0.38268	111602		1	0.70711	EM841521
8349-EM841521		111603			1	0.92388					
8350-MPC	1	8415	2		-1.	111600	2		1.00000		EM841512

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CARD	COUNT .	1 ..	2 ..	3 ..	4 ..	5 ..	6 ..	7 ..	8 ..	9 ..	10 .
9351-EM841512				111601		2-0.38268	111602		2-0.70711		EM841522
9352-EM841522				111603		2 0.92388					
9353-MPC	1		8415	3		-1.	111600	3	.0		EM841513
9354-EM841513				111601		3 0.92388	111602		3-0.70711		EM841523
9355-EM841523				111603		3-0.38269					
9356-MPC	1		8415	4		-1.	111600	4	.0		EM841514
9357-EM841514				111601		4 0.92388	111602		4-0.70711		EM841524
9358-EM841524				111603		4-0.38269					
9359-MPC	1		8415	5		-1.	111600	5	.0		EM841515
9360-EM841515				111601		5 0.92388	111602		5-0.70711		EM841525
9361-EM841525				111603		5-0.38269					
9362-MPC	1		8415	6		-1.	111600	6	1.00000		EM841516
9363-EM841516				111601		6-0.38268	111602		6-0.70711		EM841526
9364-EM841526				111603		6 0.92388					
9365-MPC	1		8415	1		-1.	111600	1	1.00000		EM841611
9366-EM841611				111601		1-0.70711	111602		1-0.00000		EM841621
9367-EM841621				111603		1 0.70711					
9368-MPC	1		8415	2		-1.	111600	2	1.00000		EM841612
9369-EM841612				111601		2-0.70711	111602		2-0.00000		EM841622
9370-EM841622				111603		2 0.70711					
9371-MPC	1		8415	3		-1.	111600	3	.0		EM841613
9372-EM841613				111601		3 0.70711	111602		3-1.00000		EM841623
9373-EM841623				111603		3 0.70710					
9374-MPC	1		8415	4		-1.	111600	4	.0		EM841614
9375-EM841614				111601		4 0.70711	111602		4-1.00000		EM841624
9376-EM841624				111603		4 0.70710					
9377-MPC	1		8415	5		-1.	111600	5	.0		EM841615
9378-EM841615				111601		5 0.70711	111602		5-1.00000		EM841625
9379-EM841625				111603		5 0.70710					
9380-MPC	1		8415	6		-1.	111600	6	1.00000		EM841616
9381-EM841616				111601		6-0.70711	111602		6-0.00000		EM841626
9382-EM841626				111603		6 0.70711					
9383-MPC	1		8417	1		-1.	111600	1	1.00000		EM841711
9384-EM841711				111601		1-0.92388	111602		1 0.70711		EM841721
9385-EM841721				111603		1-0.38268					
9386-MPC	1		8417	2		-1.	111600	2	1.00000		EM841712
9387-EM841712				111601		2-0.92388	111602		2 0.70711		EM841722
9388-EM841722				111603		2-0.38268					
9389-MPC	1		8417	3		-1.	111600	3	.0		EM841713
9390-EM841713				111601		3 0.38268	111602		3-0.70711		EM841723
9391-EM841723				111603		3 0.92388					
9392-MPC	1		8417	4		-1.	111600	4	.0		EM841714
9393-EM841714				111601		4 0.38268	111602		4-0.70711		EM841724
9394-EM841724				111603		4 0.92388					
9395-MPC	1		8417	5		-1.	111600	5	.0		EM841715
9396-EM841715				111601		5 0.38268	111602		5-0.70711		EM841725
9397-EM841725				111603		5 0.92388					
9398-MPC	1		8417	6		-1.	111600	6	1.00000		EM841716
9399-EM841716				111601		6-0.92388	111602		6 0.70711		EM841726
9400-EM841726				111603		6-0.38268					

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CARD	1	2	3	4	5	6	7	8	9	10
3401- MPC	1	8412	1	-1.	111600	1	1.00000			EM841811
9402- EM841811		111601		1-1.00000	111602		1 1.00000			EM841821
9403- EM841821		111603		1-1.00000						
9404- MPC	1	8412	2	-1.	111600	2	1.00000			EM841812
9405- EM841812		111601		2-1.00000	111602		2 1.00000			EM841822
9406- EM841822		111603		2-1.00000						
9407- MPC	1	8412	3	-1.	111600	3	.0			EM841813
9408- EM841813		111601		3 0.00000	111602		3-0.00000			EM841823
9409- EM841823		111603		3 0.00000						
9410- MPC	1	8412	4	-1.	111600	4	.0			EM841814
9411- EM841814		111601		4 0.00000	111602		4-0.00000			EM841824
9412- EM841824		111603		4 0.00000						
9413- MPC	1	8412	5	-1.	111600	5	.0			EM841815
9414- EM841815		111601		5 0.00000	111602		5-0.00000			EM841825
9415- EM841825		111603		5 0.00000						
9416- MPC	1	8412	6	-1.	111600	6	1.00000			EM841816
9417- EM841816		111601		6-1.00000	111602		6 1.00000			EM841826
9418- EM841826		111603		6-1.00000						
9419- MPC	1	8430	1	-1.	111700	1	1.00000			EM843011
9420- EM843011		111701		1 1.00000	111702		1 1.00000			EM843021
9421- EM843021		111703		1 1.00000						
9422- MPC	1	8430	2	-1.	111700	2	1.00000			EM843012
9423- EM843012		111701		2 1.00000	111702		2 1.00000			EM843022
9424- EM843022		111703		2 1.00000						
9425- MPC	1	8430	3	-1.	111700	3	.0			EM843013
9426- EM843013		111701		3 0.0	111702		3 0.0			EM843023
9427- EM843023		111703		3 0.0						
9428- MPC	1	8430	4	-1.	111700	4	.0			EM843014
9429- EM843014		111701		4 0.0	111702		4 0.0			EM843024
9430- EM843024		111703		4 0.0						
9431- MPC	1	8430	5	-1.	111700	5	.0			EM843015
9432- EM843015		111701		5 0.0	111702		5 0.0			EM843025
9433- EM843025		111703		5 0.0						
9434- MPC	1	8430	6	-1.	111700	6	1.00000			EM843016
9435- EM843016		111701		6 1.00000	111702		6 1.00000			EM843026
9436- EM843026		111703		6 1.00000						
9437- MPC	1	8431	1	-1.	111700	1	1.00000			EM843111
9438- EM843111		111701		1 0.92388	111702		1 0.70711			EM843121
9439- EM843121		111703		1 0.38268						
9440- MPC	1	8431	2	-1.	111700	2	1.00000			EM843112
9441- EM843112		111701		2 0.92388	111702		2 0.70711			EM843122
9442- EM843122		111703		2 0.38268						
9443- MPC	1	8431	3	-1.	111700	3	.0			EM843113
9444- EM843113		111701		3 0.38268	111702		3 0.70711			EM843123
9445- EM843123		111703		3 0.92388						
9446- MPC	1	8431	4	-1.	111700	4	.0			EM843114
9447- EM843114		111701		4 0.38268	111702		4 0.70711			EM843124
9448- EM843124		111703		4 0.92388						
9449- MPC	1	8431	5	-1.	111700	5	.0			EM843115
9450- EM843115		111701		5 0.38268	111702		5 0.70711			EM843125



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CARD	COUNT	1	2	3	4	5	6	7	8	9	10
9451- EM843125		111703				5 0.92388					
8452- MPC	1	8431	6			-1.	111700 6		1.00000		EM843116
9453- EM843116		111701				6 0.92388	111702		6 0.70711		EM843126
8454- EM843126		111703				6 0.38268					
8455- MPC	1	8432	1			-1.	111700 1		1.00000		EM843211
8456- EM843211		111701				1 0.70711	111702		1 0.00000		EM843221
8457- EM843221		111703				1-0.70711					
8458- MPC	1	8432	2			-1.	111700 2		1.00000		EM843212
8459- EM843212		111701				2 0.70711	111702		2 0.00000		EM843222
8460- EM843222		111703				2-0.70711					
8461- MPC	1	8432	3			-1.	111700 3		.0		EM843213
8462- EM843213		111701				3 0.70711	111702		3 1.00000		EM843223
8463- EM843223		111703				3 0.70711					
8464- MPC	1	8432	4			-1.	111700 4		.0		EM843214
8465- EM843214		111701				4 0.70711	111702		4 1.00000		EM843224
8466- EM843224		111703				4 0.70711					
8467- MPC	1	8432	5			-1.	111700 5		.0		EM843215
8468- EM843215		111701				5 0.70711	111702		5 1.00000		EM843225
8469- EM843225		111703				5 0.70711					
8470- MPC	1	8432	6			-1.	111700 6		1.00000		EM843216
9471- EM843216		111701				6 0.70711	111702		6 0.00000		EM843226
9472- EM843226		111703				6-0.70711					
8473- MPC	1	8433	1			-1.	111700 1		1.00000		EM843311
8474- EM843311		111701				1 0.38268	111702		1-0.70711		EM843321
8475- EM843321		111703				1-0.92388					
8476- MPC	1	8433	2			-1.	111700 2		1.00000		EM843312
8477- EM843312		111701				2 0.38268	111702		2-0.70711		EM843322
8478- EM843322		111703				2-0.92388					
8479- MPC	1	8433	3			-1.	111700 3		.0		EM843313
8480- EM843313		111701				3 0.92388	111702		3 0.70711		EM843323
9481- EM843323		111703				3-0.38268					
8482- MPC	1	8433	4			-1.	111700 4		.0		EM843314
8483- EM843314		111701				4 0.92388	111702		4 0.70711		EM843324
8484- EM843324		111703				4-0.38268					
8485- MPC	1	8433	5			-1.	111700 5		.0		EM843315
9486- EM843315		111701				5 0.92388	111702		5 0.70711		EM843325
9487- EM843325		111703				5-0.38268					
8488- MPC	1	8433	6			-1.	111700 6		1.00000		EM843316
8489- EM843316		111701				6 0.38268	111702		6-0.70711		EM843326
8490- EM843326		111703				6-0.92388					
8491- MPC	1	8434	1			-1.	111700 1		1.00000		EM843411
9492- EM843411		111701				1 0.00000	111702		1-1.00000		EM843421
8493- EM843421		111703				1-0.00000					
9494- MPC	1	8434	2			-1.	111700 2		1.00000		EM843412
9495- EM843412		111701				2 0.00000	111702		2-1.00000		EM843422
9496- EM843422		111703				2-0.00000					
9497- MPC	1	8434	3			-1.	111700 3		.0		EM843413
8498- EM843413		111701				3 1.00000	111702		3 0.00000		EM843423
8499- EM843423		111703				3-1.00000					

EXTERNAL TANK W. FLUID  
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SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
9501-EM843414	111701			4	1.00000	111702		4	0.00000	EM843424
9502-EM843424	111703			4	-1.00000					
9503-MPC	8434	5		-1.	111700	5		.0		EM843415
9504-EM843415	111701			5	1.00000	111702		5	0.00000	EM843425
9505-EM843425	111703			5	-1.00000					
9506-MPC	8434	6		-1.	111700	6		1.00000		EM843416
9507-EM843416	111701			6	0.00000	111702		6	-1.00000	EM843426
9508-EM843426	111703			6	-0.00000					
9509-MPC	8435	1		-1.	111700	1		1.00000		EM843511
9510-EM843511	111701			1	-0.38268	111702		1	-0.70711	EM843521
9511-EM843521	111703			1	0.92388					
9512-MPC	8435	2		-1.	111700	2		1.00000		EM843512
9513-EM843512	111701			2	-0.38268	111702		2	-0.70711	EM843522
9514-EM843522	111703			2	0.92388					
9515-MPC	8435	3		-1.	111700	3		.0		EM843513
9516-EM843513	111701			3	0.92388	111702		3	-0.70711	EM843523
9517-EM843523	111703			3	-0.38269					
9518-MPC	8435	4		-1.	111700	4		.0		EM843514
9519-EM843514	111701			4	0.92388	111702		4	-0.70711	EM843524
9520-EM843524	111703			4	-0.38269					
9521-MPC	8435	5		-1.	111700	5		.0		EM843515
9522-EM843515	111701			5	0.92388	111702		5	-0.70711	EM843525
9523-EM843525	111703			5	-0.38269					
9524-MPC	8435	6		-1.	111700	6		1.00000		EM843516
9525-EM843516	111701			6	-0.38268	111702		6	-0.70711	EM843526
9526-EM843526	111703			6	0.92388					
9527-MPC	8436	1		-1.	111700	1		1.00000		EM843611
9528-EM843611	111701			1	-0.70711	111702		1	-0.00000	EM843621
9529-EM843621	111703			1	0.70711					
9530-MPC	8436	2		-1.	111700	2		1.00000		EM843612
9531-EM843612	111701			2	-0.70711	111702		2	-0.00000	EM843622
9532-EM843622	111703			2	0.70711					
9533-MPC	8436	3		-1.	111700	3		.0		EM843613
9534-EM843613	111701			3	0.70711	111702		3	-1.00000	EM843623
9535-EM843623	111703			3	0.70710					
9536-MPC	8436	4		-1.	111700	4		.0		EM843614
9537-EM843614	111701			4	0.70711	111702		4	-1.00000	EM843624
9538-EM843624	111703			4	0.70710					
9539-MPC	8436	5		-1.	111700	5		.0		EM843615
9540-EM843615	111701			5	0.70711	111702		5	-1.00000	EM843625
9541-EM843625	111703			5	0.70710					
9542-MPC	8436	6		-1.	111700	6		1.00000		EM843616
9543-EM843616	111701			6	-0.70711	111702		6	-0.00000	EM843626
9544-EM843626	111703			6	0.70711					
9545-MPC	8437	1		-1.	111700	1		1.00000		EM843711
9546-EM843711	111701			1	-0.92398	111702		1	0.70711	EM843721
9547-EM843721	111703			1	-0.38268					
9548-MPC	8437	2		-1.	111700	2		1.00000		EM843712
9549-EM843712	111701			2	-0.92388	111702		2	0.70711	EM843722
9550-EM843722	111703			2	-0.38268					

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
9551- MPC	1	8437	3	-1.	111700	3	.0			EM843713
9552- EM843713		111701		3 0.38268	111702		3-0.70711			EM843723
9553- EM843723		111703		3 0.92388						
9554- MPC	1	8437	4	-1.	111700	4	.0			EM843714
9555- EM843714		111701		4 0.38268	111702		4-0.70711			EM843724
9556- EM843724		111703		4 0.92388						
9557- MPC	1	8437	5	-1.	111700	5	.0			EM843715
9558- EM843715		111701		5 0.38268	111702		5-0.70711			EM843725
9559- EM843725		111703		5 0.92388						
9560- MPC	1	8437	6	-1.	111700	6	1.00000			EM843716
9561- EM843716		111701		6-0.92388	111702		6 0.70711			EM843726
9562- EM843726		111703		6-0.38268						
9563- MPC	1	8438	1	-1.	111700	1	1.00000			EM843811
9564- EM843811		111701		1-1.00000	111702		1 1.00000			EM843821
9565- EM843821		111703		1-1.00000						
9566- MPC	1	8438	2	-1.	111700	2	1.00000			EM843812
9567- EM843812		111701		2-1.00000	111702		2 1.00000			EM843822
9568- EM843822		111703		2-1.00000						
9569- MPC	1	8438	3	-1.	111700	3	.0			EM843813
9570- EM843813		111701		3 0.00000	111702		3-0.00000			EM843823
9571- EM843823		111703		3 0.00000						
9572- MPC	1	8438	4	-1.	111700	4	.0			EM843814
9573- EM843814		111701		4 0.00000	111702		4-0.00000			EM843824
9574- EM843824		111703		4 0.00000						
9575- MPC	1	8438	5	-1.	111700	5	.0			EM843815
9576- EM843815		111701		5 0.00000	111702		5-0.00000			EM843825
9577- EM843825		111703		5 0.00000						
9578- MPC	1	8438	6	-1.	111700	6	1.00000			EM843816
9579- EM843816		111701		6-1.00000	111702		6 1.00000			EM843826
9580- EM843826		111703		6-1.00000						
9581- MPC	1	8440	1	1.	111700	1	-.9534			EM1
9582- EM1		111700	2	.3015						
9583- MPC	1	101600	2	.9919	101600	1	.1269			
9584- MPC	1	111700	2	.9534	111700	1	.3015			
9585- OMIT1	3	8329								
9586- OMIT1	13	8328								
9587- OMIT1	15	110200								
9588- OMIT1	26	100200	100300	100400	100500	100600	101000	101100		
9589- OMIT1	26	101200	101300	101400	101500	111400	111500	111600		
9590- OMIT1	35	5204	8440							
9591- OMIT1	35	100700	100800	100900	110100	110300	110400			
9592- OMIT1	35	110500	110600	110700	110800	110900	111000	111100		
9593- OMIT1	35	111200	111300							
9594- OMIT1	135	5001	8001							
9595- OMIT1	135	8010	8018	8030	8038	8050	8058			
9596- OMIT1	135	8350	8358							
9597- OMIT1	23456	100201	100202	100203						
9598- OMIT1	23456	100301	100302	100303						
9599- OMIT1	23456	100401	100402	100403						
9600- OMIT1	23456	100501	100502	100503						

SORTED BULK DATA ECHO

CARD

COUNT	1	2	3	4	5	6	7	8	9	10
8601- OMIT1	23456	100601	100602	100603						
8602- OMIT1	23456	100701	100702	100703						
8603- OMIT1	23456	100801	100802	100803						
8604- OMIT1	23456	100901	100902	100903						
8605- OMIT1	23456	101001	101002	101003						
8606- OMIT1	23456	101101	101102	101103						
8607- OMIT1	23456	101201	101202	101203						
8608- OMIT1	23456	101301	101302	101303						
8609- OMIT1	23456	101401	101402	101403						
8610- OMIT1	23456	101501	101502	101503						
8611- OMIT1	23456	101601	101602	101603						
8612- OMIT1	23456	110101	110102	110103						
8613- OMIT1	23456	110201	110202	110203						
8614- OMIT1	23456	110301	110302	110303						
8615- OMIT1	23456	110401	110402	110403						
8616- OMIT1	23456	110501	110502	110503						
8617- OMIT1	23456	110601	110602	110603						
8618- OMIT1	23456	110701	110702	110703						
8619- OMIT1	23456	110801	110802	110803						
8620- OMIT1	23456	110901	110902	110903						
8621- OMIT1	23456	111001	111002	111003						
8622- OMIT1	23456	111101	111102	111103						
8623- OMIT1	23456	111201	111202	111203						
8624- OMIT1	23456	111301	111302	111303						
8625- OMIT1	23456	111401	111402	111403						
8626- OMIT1	23456	111501	111502	111503						
8627- OMIT1	23456	111601	111602	111603						
8628- OMIT1	23456	111701	111702	111703						
8629- OMIT1	123456	8011	8012	8013	8014	8015	8016	8017		
8630- OMIT1	123456	8031	8032	8033	8034	8035	8036	8037		
8631- OMIT1	123456	8051	8052	8053	8054	8055	8056	8057		
8632- OMIT1	123456	8134								
8633- OMIT1	123456	8351	8352	8353	8354	8355	8356	8357		
8634- PBAR	5517	5517	.63	.349	.037	.0103	.0			
8635- PBAR	8400	8400	.242	.0260	.0180		.0000613			
8636- PBAR	8410	8400	.054	.0028	.0025		.000014			
8637- PBAR	8420	8400	.324	.0126	.3680		.0000779			
8638- PBAR	8430	8400	.162	.0063	.184		.0000388			
8639- PBAR	8440	8400	.484	.0513	.0250		.0001227			
8640- PBAR	8450	8400	.054	.0028	.0025		.000014			
8641- PEAR	8460	8400	.054	.0028	.0025		.000014			
8642- PBAR	8470	8400	.324	.0126	.3680		.0000779			
8643- PEAR	8480	8400	.054	.0028	.0025		.000014			
8644- PEAR	8490	8400	.054	.0028	.0025		.000014			
8645- PEAR	8500	8400	.054	.0028	.0025		.000014			
8646- PEAR	8510	8400	.324	.0126	.3680		.0000779			
8647- PBAR	8520	8400	.054	.0028	.0025		.000014			
8648- PBAR	8530	8400	.324	.0126	.3680		.0000779			
8649- PEAR	8531	8400	.324		.3680		.0000779			
8650- PBAR	8540	8400	.484	.0513	.0250		.0001227			

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CARD

CARD	1	2	3	4	5	6	7	8	9	10
8651- PBAR	8550	8400	.324	.0126	.3680			.0000779		
8652- PLOTTEL	91	5091	5092		92	5092	5093			
8653- PLOTTEL	93	5093	5094		94	5094	5095			
8654- PLOTTEL	95	5095	5096		96	5096	5097			
8655- PLOTTEL	97	5097	5098		98	5098	5099			
8656- PLOTTEL	250	8250	8251		251	8251	8252			
8657- PLOTTEL	252	8252	8253		253	8253	8254			
8658- PLOTTEL	254	8254	8255		255	8255	8256			
8659- PLOTTEL	256	8256	8257		257	8257	8258			
8660- PQUAD2	5009	5517	.020	.0	5073	5517	.016			
8661- PQUAD2	5113	5517	.040	.0						
8662- PQUAD2	8010	8010	.020							
8663- PQUAD2	8011	8010	.020							
8664- PQUAD2	8072	8010	.055							
8665- PQUAD2	8092	8010	.048							
8666- PQUAD2	8112	8010	.040							
8667- PQUAD2	8150	8010	.025							
8668- PQUAD2	8151	8010	.025							
8669- PQUAD2	8153	8010	.057							
8670- PQUAD2	8150	8010	.016							
8671- PQUAD2	8230	8010	.021							
8672- PQUAD2	8330	8010	.022							
8673- PTRIA2	5055	5517	.025	.0						
8674- PTRIA2	5113	5517	.04	.0						
8675- PTRIA2	8000	8010	.020							
8676- PTRIA2	8001	8010	.020							
8677- SPC1	1	2	8140	8209	8299	8328	8341	8359		
8678- SPC1	1	2	8360							
8679- SPC1	1	6	101600	111700						
8680- SPC1	1	246	5001	5204	8001	8440				
8681- SPC1	1	246	8010	8018	8030	8038	8050	8058		
8682- SPC1	1	246	8350	8358						
8683- SPC1	1	246	100700	100800	100900					
8684- SPC1	1	246	110100	110200	110300	110400	110500	110600		
8685- SPC1	1	246	110700	110800	110900	111000	111100	111200		
8686- SPC1	1	246	111300							
8687- SPC1	1	345	100200	100300	100400	100500	100600			
8688- SPC1	1	345	101000	101100	101200	101300	101400	101500		
8689- SPC1	1	345	101600							
8690- SPC1	1	345	111400	111500	111600	111700				
8691- SUPCRT	100701	1	111301	1	110200	3				

ENDCATA

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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
1 BEGIN      N3.3 NORMAL MODS ANALYSIS - SERIES M $
2 FILE       LLL=TAPE $
3 GP1        GEOM1,GEOM2,/GFL,EQEXIN,GPCT,CSTM,BGPD,T,SIL/V,N,LUSET/ C,N,
             123/V,N,NOGPD $
4 SAVE       LUSET $
5 CHKPNT     GFL,EQEXIN,GPDT,CSTM,BGPD,T,SIL $
6 GP2        GEOM2,EQEXIN/ECT $
7 CHKPNT     ECT $
8 PLTSET     PCDB,EQEXIN,ECT/PLTSETX,PLTPAR,GPSETS,ELSETS/V,N,NSIL/ V,N,
             JUMPPLCT $
9 SAVE       NSIL,JUMPPLCT $
10 PRMSG     PLTSETX// $
11 SETVAL    //V,N,PLTFLG/C,N,1/V,N,PFILE/C,N,0 $
12 SAVE      PLTFLG,PFILE $
13 CCND      P1,JUMPLOT $
14 PLOT      PLTPAR,GPSETS,ELSETS,CASECC,BGPD,T,EQEXIN,SIL,,/PLOTX1/ V,N,
             NSIL/V,N,LUSET/V,N,JUMPPLCT/V,N,PLTFLG/V,N,PFILE $
15 SAVE      JUMPPLCT,PLTFLG,PFILE $
16 PRMSG     PLOTX1// $
17 LABEL     P1 $
18 CHKPNT     PLTPAR,GPSETS,ELSETS $
19 GP3        GEOM3,EQEXIN,GEOM2,/GFTT/C,N,123/V,N,NOGRAV/C,N,123 $
20 CHKPNT     GFTT $
21 TA1.      ,ECT,EFT,BGPD,T,SIL,GFTT,CSTM/EST,,GEI,ECPT,GPCT/V,N,LUSET/ C,N,
             123/V,N,NOSIMP/C,N,0/V,N,NOGENL/V,N,GENEL $
22 SAVE      NOGENL,NOSIMP,GENEL $
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N A S T R A N S C U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

23 COND ERROR1,NOSIMP \$  
24 PURGE OGPST/GENEL \$  
25 CHKPNT EST,ECPT,GPCT,GEI,OGPST \$  
26 SMA1 CSTN,MPT,ECPT,GPCT,DIT/KGGX,,GPST/V,N,NOGENL/V,N,NOK4GG \$  
27 CHKPNT KGGX,GFST \$  
28 SMA2 CSTN,MPT,ECPT,GPCT,DIT/MGG,/V,Y,WTMASS=1.0/V,N,NOMGG/V,N,NOBGG/  
V,Y,CJUFMASS/V,Y,CPBAR/V,Y,CPRCD/V,Y,CPQUAD1/V,Y,CPQUAD2/ V,  
Y,CPTRIA1/V,Y,CPTRIA2/V,Y,CPTUEE/V,Y,CPQDPLT/V,Y,CPTRPLT/ V,Y,  
CPTRBSC \$  
29 SAVE NOMGG \$  
30 COND ERROR1,NOMGG \$  
31 CHKPNT MGG \$  
32 COND LGPWG,GRDFNT \$  
33 GPWG BGDDT,CSTM,EQEXIN,MGG/(GFWG/V,Y,GRDFNT=-1/V,Y,WTMASS \$  
34 OFP OGPWG,,,,,/V,N,CARDNC \$  
35 SAVE CARDNC \$  
36 LABEL LGPWG \$  
37 EQUIV KGGX,KGG/NOGENL \$  
38 CHKPNT KGG \$  
39 COND LBL11,NOGENL \$  
40 SMA3 GEI,KGGX/KGG/V,N,LUSET/V,N,NOGENL/V,N,NOSIMP \$  
41 CHKPNT KGG \$  
42 LABEL LBL11 \$  
43 PARA1 //C,N,MPY/V,N,NSKIP/C,N,C/C,N,0 \$  
44 GP4 CASECC,GEOM4,EQEXIN,SIL,GFDT/RG,,USET,/V,N,LUSET/V,N,MPCF1/ V,  
N,MPCF2/V,N,SINGLE/V,N,CMIT/V,N,REACT/V,N,NSKIP/V,N,REPEAT/  
V,N,NOSET/V,N,NOL/V,N,NCA \$  
45 SAVE MPCF1,MPCF2,SINGLE,OMIT,REACT,NSKIP,REPEAT,NOSET,NOL,NCA \$

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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

46 COND ERROR3,NOL \$  
47 PURGE KRR,KLF,DM,MLR,MR/REACT/GM/MPCF1/GO/OMIT/KFS/SINGLE/QG/NOSET \$  
48 EQUIV KGG,KNN/MPCF1/MGG,MNN/MPCF1 \$  
49 CHKPNT KRR,KLF,DM,MLR,MR,GM,RC,GO,KFS,OG,USET,KNN,MNN \$  
50 COND L3L4,GENEL \$  
51 GPSP GPL,GPST,USET,SIL/OGPST \$  
52 OFP OSPST,....//V,N,CARDNC \$  
53 SAVE CAROND \$  
54 LABEL L9L4 \$  
55 COND L3L2,MPCF2 \$  
56 MCE1 USET,RG/GM \$  
57 CHKPNT G4 \$  
58 MCE2 USET,GM,KGG,MGG,./KNN,MNN.. \$  
59 CHKPNT KNN,MNN \$  
60 LABEL L9L2 \$  
61 EQUIV KNN,KFF/SINGLE/MNN,MFF/SINGLE \$  
62 CHKPNT KFF,MFF \$  
63 COND L3L3,SINGLE \$  
64 SCE1 USET,KNN,MNN,./KFF,KFS,./MFF, \$  
65 CHKPNT KFS,KFF,MFF \$  
66 LABEL L3L3 \$  
67 EQUIV KFF,KAA/OMIT/ MFF,MAA/OMIT \$  
68 CHKPNT KAA,MAA \$  
69 COND L3L5,OMIT \$  
70 SMP1 USET,KFF,./GG,KAA,KCC,LCC,UOC,..... \$



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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
D N A P - D N A P I N S T R U C T I O N  
N O .

```
71  CHKPNT    GO,KAA $
72  SMP2      USET,GO,MFF/MAA $
73  CHKPNT    MAA $
74  LABEL     LBL5 $
74  ADD MAA,MFLD/MAH $
74  PARAM //C,N,NOP/V,N,TRUE=-1 $
74  EQUIV MAH,MAA/TRUE $
74  COND MAHNO9,TRUE $
74  MATPRN MAH,...// $
74  LABEL MAHNO9 $
75  CCND      L9L6,REACT $
76  RBMG1     USET,KAA,MAA/KLL,KLR,KFF,MLL,MLR,MRR $
77  CHKPNT    KLL,KLR,KRR,MLL,MLR,MFF $
78  RBMG2     KLL/LLL,ULL $
79  CHKPNT    ULL,LLL $
80  RBMG3     LLL,ULL,KLR,KRR/DM $
81  CHKPNT    DM $
82  RBMG4     DM,MLL,MLR,MRR/MR $
83  CHKPNT    MR $
84  LABEL     L3L6 $
85  DPD       DYNAMICS,GPL,SIL,USET/GPLD,SILC,USETD,.....EED,EQDYN/V,N,
              LUSET/V,N,LUSETD/V,N,ACTFL/V,N,NODLT/V,N,NOPSDL/V,N,NOFRL/ V,
              N,NCONFT/V,N,NCTRL/V,N,NCEED/C,N,123/V,N,NOUE $
86  SAVE      NJEED $
87  COND      ERROR2,NOEED $
88  CHKPNT    EED $
```

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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

NASTRAN SOURCE PROGRAM COMPILATION  
DMAP-DMAP INSTRUCTION  
NO.

```
88 SEEMAT MGG,KGG,,,/C,N,PRINT $
89 READ      KAA,MAA,MR,DM,EED,uset,CASECC/LAMA,PHIA,MI,DEIGS/C,N,MODES/V,N,
           NEIGV $
90 SAVE      NEIGV $
91 CHKPNT    LAMA,PHIA,MI,DEIGS $
91 MATGPR GPL,uset,SIL,PHIA//C,N,A
92 DFP      LAMA,DEIGS,,,/V,N,CARDNO $
93 SAVE      CARDNO $
94 COND      FINIS,NEIGV $
95 SDR1      USET,,PHIA,,,GO,GM,,KFS,,/PHIG,,QG/C,N,1/C,N,REIG $
96 CHKPNT    PHIG,QG $
97 PARAM     //C,N,SUB/V,N,SCALAR/V,N,SIL/V,N,LUSET $
98 EQUIV     SIL,SIP/SCALAR/BGPDT,EGPCP/SCALAR $
99 CHKPNT    SIP,BGPCP $
100 COND     L3L7,SCALAR $
101 PLTTRAN   BGPDT,SIL/BGPOP,SIP/V,N,LUSET/V,N,LUSEP $
102 SAVE      LUSEP $
103 CHKPNT    BGPCP,SIP $
104 LABEL     L3L7 $
105 SDR2      CASECC,CSTM,MF1,DIT,EGEXIN,SIL,,,BGPOP,LAMA,QG,PHIG,EST,/,QOG1,
           JPHIG,QES1,DEF1,PPHIG/C,N,REIG $
106 DFP      JPHIG,QOG1,DEF1,QES1,,,/V,N,CARDNO $
107 SAVE      CARDNO $
107 SMPYAD PHIA,KAA,PHIA,,,/KH/C,N,3/C,N,1/C,N,1/C,N,2/C,N,1 $
107 SOLVE MI,KH//KH/C,N,1 $
107 SMPYAD JGU2,PHIA,WH,,,/FD2/C,N,3 $
```

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EXTERNAL TANK W. FLUID  
HARMONIC REDUCTION

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N  
DMAP-DMAP INSTRUCTION  
NO.

```
107 MATPRN WH,PD2,,,// $
108 CGND      P2,JUMPPLOT $
109 PLOT      PLTPAR,GPSETS,ELSETS,CASECC,BGFDY,EGEXIN,SIP,,PPHIG / PLOTX2/
              V,N,NSIL/V,N,LCSET/V,N,JUMPPLOT/V,N,PLTFLG/V,N,PFILE $
110 SAVE      PFILE $
111 PRTMSG    PLOTX2// $
112 LABEL     P2 $
113 JUMP      FIVIS $
114 LABEL     ERROR1 $
115 PRTPARM   //C,N,-1/C,N,MCDES $
116 LABEL     ERROR2 $
117 PRTPARM   //C,N,-2/C,N,MCDES $
118 LABEL     ERROR3 $
119 PRTPARM   //C,N,-3/C,N,MCDES $
120 LABEL     FIVIS $
121 END      $
```

\*\*\*NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM\*\*

**Appendix C6**  
**HARMONIC REDUCTION MPC GENERATOR FOR**  
**FORTRAN PROGRAM**

DIMENSION KHARM(10),KH(10)	HAR00010
PEAD(4,10)NH,NPT,NFS	HAR00020
10 FORMAT(8X,3I8)	HAR00030
READ(4,20) (KHARM(I),I=1,NH)	HAR00040
20 FORMAT(8X,7I8)	HAR00050
NH1=NH-1	HAR00060
NH2=NH1/2	HAR00070
NH3=NH1-2*NH2	HAR00080
DO 1000 K9=1,NPT	HAR00090
READ(4,100) NGR,NROW,THET,NTYP	HAR00100
100 FORMAT(8X,I8,I8,F8.3,I8)	HAR00110
THET= THET/57.2958	HAR00120
DO 120 I=1,NH	HAR00130
120 KH(I)=100000+100*NROW+KHARM(I)	HAR00140
IF(NTYP.EQ.2) GO TO 500	HAR00150
J=1	HAR00160
A= KHARM(I)*THET	HAR00170
NB=KH(I)	HAR00180
CS1= COS(A)	HAR00190
SN1= SIN(A)	HAR00200
NC1=100*NGR+11	HAR00210
L=1	HAR00220
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR00230
130 FORMAT('MPC',5X,'1',7X,2I8,'-1',5X,2I8,F8.5,8X,'+',I7)	HAR00240
IF(NFS.EQ.0) GO TO 29	HAR00250
L=2	HAR00260
NC1=100*NGR+12	HAR00270
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR00280
L=3	HAR00290
NC1=100*NGR+13	HAR00300
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR00310
L=4	HAR00320
NC1=100*NGR+14	HAR00330
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR00340
L=5	HAR00350
NC1=100*NGR+15	HAR00360
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR00370
L=6	HAR00380
NC1=100*NGR+16	HAR00390
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR00400
29 CONTINUE	HAR00410
IF(NH1.EQ.0) GO TO 1000	HAR00420
IF(NH2.EQ.0) GO TO 300	HAR00430
DO 200 J=1,NH2	HAR00440
J1=2*J	HAR00450
J2=J1+1	HAR00460
A= KHARM(J1)*THET	HAR00470
CS1= COS(A)	HAR00480
SN1= SIN(A)	HAR00490
A= KHARM(J2)*THET	HAR00500
CS2= COS(A)	HAR00510
SN2= SIN(A)	HAR00520
NB1=KH(J1)	HAR00530
NB2=KH(J2)	HAR00540
L=1	HAR00550

FILE0 HARM FORTRAN P1

GRUMMAN DATA SYSTEMS

NC1=100*NGR+10*J+1	HAR00560
NC2=100*NGF+10*(J+1)+1	HAR00570
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR00580
150 FORMAT('+',I7.8X,2I8,F8.5,2I8,F8.5,8X,'+',I7)	HAR00590
IF(NFS.EQ.0) GO TO 200	HAR00600
L=2	HAR00610
NC1=NC1+1	HAR00620
NC2=NC2+1	HAR00630
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR00640
L=3	HAR00650
NC1=NC1+1	HAR00660
NC2=NC2+1	HAR00670
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR00680
L=4	HAR00690
NC1=NC1+1	HAR00700
NC2=NC2+1	HAR00710
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR00720
L=5	HAR00730
NC1=NC1+1	HAR00740
NC2=NC2+1	HAR00750
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR00760
L=6	HAR00770
NC1=NC1+1	HAR00780
NC2=NC2+1	HAR00790
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR00800
200 CONTINUE	HAR00810
J=J+1	HAR00820
IF(NH3.EQ.C) GO TO 1000	HAR00830
300 CONTINUE	HAR00840
A=KHARM(NH)*THET	HAR00850
NB=KH(NH)	HAR00860
CS1= COS(A)	HAR00870
SN1= SIN(A)	HAR00880
L=1	HAR00890
NC1=100*NGF+10*J+1	HAR00900
WRITE(7,160) NC1,NB,L,CS1	HAR00910
160 FORMAT('+M',I6.8X,2I8,F8.5)	HAR00920
IF(NFS.EQ.0) GO TO 1000	HAR00930
L=2	HAR00940
NC1=NC1+1	HAR00950
WRITE(7,160) NC1,NB,L,SN1	HAR00960
L=3	HAR00970
NC1=NC1+1	HAR00980
WRITE(7,160) NC1,NB,L,CS1	HAR00990
L=4	HAR01000
NC1=NC1+1	HAR01010
WRITE(7,160) NC1,NB,L,SN1	HAR01020
L=5	HAR01030
NC1=NC1+1	HAR01040
WRITE(7,160) NC1,NB,L,CS1	HAR01050
L=6	HAR01060
NC1=NC1+1	HAR01070
WRITE(7,160) NC1,NB,L,SN1	HAR01080
GO TO 1000	HAR01090
500 CONTINUE	HAR01100

J=1	HAR01110
A= KHARM(1)*THET	HAR01120
NB=KH(1)	HAR01130
CS1= COS(A)	HAR01140
SN1= SIN(A)	HAR01150
NC1=100*NGR+11	HAR01160
L=1	HAR01170
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR01180
IF(NFS.EQ.0)GO TO 229	HAR01190
L=2	HAR01200
NC1=100*NGR+12	HAR01210
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR01220
L=3	HAR01230
NC1=100*NGR+13	HAR01240
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR01250
L=4	HAR01260
NC1=100*NGR+14	HAR01270
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR01280
L=5	HAR01290
NC1=100*NGR+15	HAR01300
WRITE(7,130) NGR,L,NB,L,SN1,NC1	HAR01310
L=6	HAR01320
NC1=100*NGR+16	HAR01330
WRITE(7,130) NGR,L,NB,L,CS1,NC1	HAR01340
229 CONTINUE	HAR01350
IF(NH1.EQ.0) GO TO 1000	HAR01360
IF(NH2.EQ.0) GO TO 800	HAR01370
DO 700 J=1,NH2	HAR01380
J1=2*J	HAR01390
J2=J1+1	HAR01400
A= KHARM(J1)*THET	HAR01410
CS1= COS(A)	HAR01420
SN1= SIN(A)	HAR01430
A= KHARM(J2)*THET	HAR01440
CS2= COS(A)	HAR01450
SN2= SIN(A)	HAR01460
NB1=KH(J1)	HAR01470
NB2=KH(J2)	HAR01480
L=1	HAR01490
NC1=100*NGR+10*J+1	HAR01500
NC2=100*NGR+10*(J+1)+1	HAR01510
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR01520
IF(NFS.EQ.0) GO TO 700	HAR01530
L=2	HAR01540
NC1=NC1+1	HAR01550
NC2=NC2+1	HAR01560
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR01570
L=3	HAR01580
NC1=NC1+1	HAR01590
NC2=NC2+1	HAR01600
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR01610
L=4	HAR01620
NC1=NC1+1	HAR01630
NC2=NC2+1	HAR01640
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR01650

FILE0 HARM      FORTRAN P1

GRUMMAN DATA SYSTEMS

L=5	HAR01660
NC1=NC1+1	HAR01670
NC2=NC2+1	HAR01680
WRITE(7,150) NC1,NB1,L,SN1,NB2,L,SN2,NC2	HAR01690
L=6	HAR01700
NC1=NC1+1	HAR01710
NC2=NC2+1	HAR01720
WRITE(7,150) NC1,NB1,L,CS1,NB2,L,CS2,NC2	HAR01730
700 CONTINUE	HAR01740
J=J+1	HAR01750
IF(NH3.EQ.0) GO TO 1000	HAR01760
800 CONTINUE	HAR01770
A= KHARM(NH)*THET	HAR01780
NB=KH(NH)	HAR01790
CS1= COS(A)	HAR01800
SN1= SIN(A)	HAR01810
L=1	HAR01820
NC1=100*NGP+10*J+1	HAR01830
WRITE(7,160) NC1,NB,L,CS1	HAR01840
IF(NFS.EQ.0) GO TO 1000	HAR01850
L=2	HAR01860
NC1=NC1+1	HAR01870
WRITE(7,160) NC1,NB,L,CS1	HAR01880
L=3	HAR01890
NC1=NC1+1	HAR01900
WRITE(7,160) NC1,NB,L,SN1	HAR01910
L=4	HAR01920
NC1=NC1+1	HAR01930
WRITE(7,160) NC1,NB,L,SN1	HAR01940
L=5	HAR01950
NC1=NC1+1	HAR01960
WRITE(7,160) NC1,NB,L,SN1	HAR01970
L=6	HAR01980
NC1=NC1+1	HAR01990
WRITE(7,160) NC1,NB,L,CS1	HAR02000
1000 CONTINUE	HAR02010
STOP	HAR02020
END	HAR02030



